WILD BUT WIRED?

THE CO-CONSTRUCTION OF SOCIETY AND TECHNOLOGY IN RURAL STRATHCLYDE

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ABSTRACT

This study critically examines the co-construction of society and technology in rural Strathclyde during the late 1990s. A range of uses of information and communications technology (ICT) - spanning employment, community development and education - is accounted for, in a variety of highly localised settings on the islands of Arran, Islay and Jura and the Kintyre peninsula. Explanation is offered as to why certain outcomes have been arrived at. The reflexive relationship between technology and society is then highlighted, as it is shown that the challenge of introducing ICT to the region has affected change in local governance structures, catalysing new partnerships while challenging existing power relations.

Building upon recent work in rural studies relating to the post-productivist countryside, theories derived from the sociology of science (specifically Social Construction of Technology and Actor Network Theory approaches) are employed in an attempt to heighten understanding of local sensitivity to 'globalising' technologies. A qualitative methodology is employed, consisting of depth interviews conducted with leading local actors throughout 1997 and 1998. The narratives give insight into these actors' beliefs and motivation as they have attempted to guide the innovation, diffusion and application of ICT in the region. Critical insight is sought as to how their frequently conflicting understanding of rural needs acts as a constraint upon the contingency of technical development locally, prompting certain courses of action to be favoured above others.

The study draws more generally upon the experiences of rural Strathclyde to build a model of local sensitivity to technical change in the countryside. It is argued that the power to act rests in many hands and that those local actors who possess the necessary skills and resources to act as 'conduits' - linking local and 'global' circuits of production and consumption - do not always behave in ways that optimise local outcomes. Only under certain conditions can the effective deployment of ICT enable 'powerful' localities to act competitively 'at a distance' in seeking new trade and investment. It is argued that failure to appreciate the diversity of possible local responses to the provision of ICT has sometimes left policy-makers with exaggerated expectations for technically driven rural restructuring.

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LIST OF ABBREVIATIONS

ABC Argyll and Bute Council
ADSL Asymmetric Digital Subscriber Line
AIE Argyll and the Islands Enterprise
ANT Actor-network theory
ATB Area Tourist Board
BT British Telecom
BT Scotland British Telecom Scotland (established 1998)
CAD Computer Aided Design
CAM Computer Aided Manufacturing
Calmac Caledonian MacBrayne
CMC Computer-mediated communications
CTC Community Teleservice Centre
CVC Council for Voluntary Service
HIDB Highlands & Islands Development Board
HIE Highlands and Islands Enterprise
HITI Highlands and Islands Telecommunications Initiative
HTML Hyper Text Mark-Up Language
I&JCVS Islay and Jura Council for Voluntary Service
ICT Information and Communications Technology
ISDN Integrated Services Digital Network
IT Information Technology
KIT Knowledge, Information and Telecommunications sector
LEC Local Enterprise Company
MCTL Modern Communications for Teaching and Learning
MOR Mode Of Regulation
NAC North Ayrshire Council
NGFL National Grid For Learning
SCOT Social Construction Of Technology
SME Small and Medium-sized Enterprise
SRA Strathclyde Regional Authority
SSK Sociology of Scientific Knowledge
STS Science and Technology Studies
TEC Training and Enterprise Council
TIC Tourist Information Centre
WAP Wireless Application Protocol

Chapter 1

New technologies in the post-productivist countryside

Chapter outline

There are three parts to this introductory chapter. Firstly, the infrastructure, hardware and software that are collectively known as Information and Communications Technology (ICT) are shown to have re-ignited long-standing debates about the reflexive relationship between technology and society and the relative importance of structure and agency in influencing outcomes. Secondly, the introduction of ICT to rural areas in the UK is related to the idea of a 'post-productivist' countryside, a concept which is now widely adhered to within rural geography. Thirdly, the structure of the work and its aims and objectives are outlined.

1.1 Technology and society

Information and Communications Technology (ICT), sometimes referred to as telematics, is a shorthand expression for the bundle of information-processing and telecommunications technologies whose influence has grown so rapidly in all spheres of human endeavour since the late 1970s. In the last five years[1] in particular, marked advancements in the sophistication of computer hardware, software and networking technologies have led to an increasing number of businesses, services and individual households utilising ICT. Global use of the World Wide Web has been growing exponentially since 1995 and the purchase of Time-Warner by America On-Line in February 2000 is perhaps symptomatic of The Internet's 'coming of age'.

A belief that such technologies are re-inscribing many of the most fundamental tenets of society pervades popular commentary on 'the information age' (Bingham, 1995). Within social science the proponents of various versions of a post-industrial, post-Fordist or postmodern society have been arguing for at least three decades now for the recognition of a fundamental rupture with an earlier industrial epoch, with IT (and now ICT) acting as the usher (McLuhan, 1969; Touraine, 1969; Bell, 1973 and 1980; Jameson, 1984; Lyotard, 1984; Hall and Jacques, 1989; Lash and Urry, 1994). New techniques of production and consumption – new ways of doing and seeing - are

underpinned by the rapid flows of information which are facilitated by advancements made in the field of ICT (Baudrillard, 1983; Lash, 1990).

Undoubtedly, ICT impinges upon the production of urban and rural space. However, the notion that technology is an autonomous force with an unfettered ability to rework and reshape existing social and geographical relations rests uneasily with the equally justifiable assumption that it exists to *serve*. According to the latter belief-system, surely technology is fitting around people and not the other way around? Theories of the society/technology relationship vacillate between these two poles, whether in respect to turnpikes, television[2] or modems. Such arguments are by now well rehearsed and preface much contemporary writing on technology and society[3] (Cockburn, 1992).

At one extreme lies the discourse of technological determinism, a simplified model of the development process concerned largely with the social impacts sustained by a linear trajectory of technological innovation. Associated particularly with the logical positivism of early development theory, epitomised by Rostow's classic conception of 'take-off', technical innovation is seen as 'uncaused', with development as its effect. Society quietly minds its own business until – wham! – industrialisation occurs, irrevocably transforming social relations. At the other extreme, social shaping approaches posit that technological change occurs as a response to decisions taken in the social realm. In Marxist thought technology exists to serve the interests of the bourgeoisie, as exhibited through rounds of mechanisation and technically-abetted rationalisation which all serve to boost profits.

An alternative approach to such broad 'globalising' narratives is subscribed to in this study, one which involves researchers examining the inherent reflexivity between society and technology as it unfolds in a given milieu. Bijker (1995a) describes such work as the study of 'socio-technical ensembles'. Drawing upon insights gained from 'micro' studies conducted within the field of Science and Technology Studies (STS) – a sub-discipline of sociology - the researcher works 'in' from the context, attempting to construct a 'seamless web' of science, technology and society that collapses the distinction between technical and social forces as presented in a given situation (Callon, 1986, Hughes, 1987, Bijker, 1995a). From a geographical perspective, this is an approach which lends itself well to an examination of the importance of local conditions in relation to global flows of information (Castells, 1996). The starting point becomes the located context within which innovation takes place, from which

the researcher works outwards in an analytical spiral. Thus the markets, states, organisations and cultural contexts that shape socio-technical interaction are identified and efforts are made to trace their influence on the evolving networks. They collectively constitute a 'technological frame' that helps to guide interaction.

At times ambiguities are seen to be present in the local development and deployment of a technological field. Branch points can be identified beyond which certain approaches and artefacts succeed while others fail. Technologies emerge from processes of choice and negotiation between relevant social groups, and interpretative flexibility (the different meanings given to the same artefact by different groups) tends towards closure as time passes. Edge (1995) argues that this approach is well suited to the study of ICT where different social and political interests have seized upon it as a panacea to a variety of perceived problems.

There are clear links between social construction of technology approaches and postmodern social and cultural analysis, wherein a revised assessment of the role of consumers as active agents of change within a wide interpretative horizon has ousted purely structural notions of power relations (Featherstone, 1991; Morley, 1992; Bennett, 1993). Watching television, for instance, can no longer be assumed to be 'a one-dimensional activity which has equivalent meaning or significance at all times for all who perform it' (Morley, 1986, 15). This heightened emphasis on the selective consumption of technology has gone some way to raising academic sensitivity to the freedom of individual agents to act independently, whilst still bound into wider structures of production.

The purpose of this study is to examine such processes at work in areas of rural Britain, with special reference to case studies drawn from Strathclyde in southwest Scotland. By linking studies of local action with a broader analysis of the institutional forces at play in the region, the aim is to develop a better understanding of the relations between technology and society in contemporary rural Britain which recognises the importance of both structure and agency. A balance is maintained between technological and social 'explanations' of local change while also recognising the importance of exogenous influences on rural development.

1.2 ICT in a rural context

The focus of ICT research within geography is predominantly urban (Castells, 1989; Graham and Marvin, 1996). While rural geographers are engaging with the notion of a 'post-productive' countryside (Marsden *et al.* 1993; Halfacree, 1997) - a context which embraces such wide-ranging issues as leisure and heritage, migration, new forms of governance and notions of stewardship - only a small amount of empirical work has focused exclusively on ICT (Ilbery *et al.*, 1995), although its importance is widely acknowledged (Cloke *et al.*, 1994; Boyle and Halfacree, 1998; Halfacree, 1998; Marsden, 1999). Future prospects for 'wired' rural areas have received a great deal of attention from policy-makers and private enterprise, with a number of evaluative studies of ICT being commissioned by agencies such as the (former) Rural Development Commission (Arup, 1996; Huws *et al.*, 1996) or firms such as BT (Bryden *et al.*, 1993, 1995).

Recent White Papers for rural England, Scotland and Wales have applauded the 'significant opportunities for rural enterprise' (DoE, 1995, 59) and 'exciting range of options' (Scottish Office,1995, 56) that ICT brings to rural areas with telematics increasingly informing the mission statements for both Local Authorities and Enterprise Councils and Companies. Given the sedimentation of 'deprivation' into policy matters linked to rural Britain (Cloke, Milbourne and Thomas, 1997), it is not surprising to see that ICT is constructed as a 'problem-solver' and as an agent of 're-vitalisation'. The potential of ICT to redress a long-standing sense of economic and physical marginality is keenly felt in rural areas, both by those agencies who are responsible for setting strategic directions and by members of the communities themselves[4]. From the outset, it must be clearly acknowledged that the social framing of ICT as a panacea to under-development is one of the key *structural constraints on the contingency of technical development* as practised in rural Britain.

Amidst talk of an 'information society' rural development agencies are especially keen to avoid a scenario where the population of the areas for which they are responsible become numbered amongst the 'information poor' *(Northern Infomatics*, 1997). As use of ICT has grown, especially as applied to the field of e-commerce, it has increasingly come to be seen as a valuable resource by regional agencies such as Local Enterprise Companies who are seeking to foster a competitive local economy

and to enhance local services by securing a more favourable niche within regional, national and global networks of production and consumption.

However, the empirical evidence to back up the assertion that ICT will revolutionise rural life is thin on the ground and successive White Papers have been heavily dependent upon a very small group of subsidised 'success stories' as case examples. Recent reports reserve judgement on the long-term benefits that may be anticipated in the majority of remoter regions (Arup, 1996; Huws *et al.*, 1996; see also Cloke *et al.*, 1994a; *Northern Infomatics*, 1997). While there is widespread agreement amongst rural agencies that ICT has the potential to bring about exciting changes and new business opportunities, the trajectory that such technical development will follow remains unclear, as does the role that various statutory bodies might play in attempting to steer such development.

Rigorous and reliable research into the extent of new forms of rural telework, for instance, is particularly thin on the ground at the time of writing. Much material is anecdotal, such as the assertion[5] that 'there are more people doing research on telework than there are actual teleworkers' (Castells, 1996a, 394). Most academic studies have taken the form of general 'social impact' surveys with very little regional depth and decent ethnographic data are more likely to be found in broadsheet supplements such as *The Guardian*'s 'On-Line' and *The Times's* 'Interface' where rural 'champions' are often profiled. Estimates of ICT usage by established rural businesses are also highly variable thus far, precluding generalisation. For instance, research by the Telecottage Association in the Settle-Carlisle region found that some local business people had 'literally never touched a keyboard' (Partridge, 1997, 2). In contrast, East Anglian industries have long been receiving assistance from the Centre for the Application of Information Technologies for Land Based Industries operating at Suffolk College. Training is regionally variable as it generally comes under the auspices of local Training and Enterprise Councils (TECs) and Business Link partnerships between the TECs and agencies such as the (former) Rural Development Commission[6] (DoE, 1995). Several of the most well-documented rural ICT 'success stories' are found in Scotland where the Highlands and Islands Development Board (HIDB), in conjunction with BT, launched a significant upgrade of the telecoms network in 1989, representing a total investment of £20 million. In the Western Isles, for instance, 50 teleworkers recently started editing manuscripts for Oxford University Press (*Teleworker*, 1997).

While new opportunities for work and training are derived from the application of ICT, there are dangers too. Local people, in the absence of training and investment, are more likely to be employed as low-wage personnel for call centres or may instead provide formal and informal support roles to professional teleworkers moving into their community. Rural areas and communities thus face an uncertain future, not just in terms of economic opportunity but in relation to other concerns. Tele-mediated delivery of services may hasten the decline of rural services and enterprises.

However, given the sheer diversity of public, private and voluntary sector actors with a strategic interest in ICT, marked regional variations are inevitable in the types of activity adopted in differing rural locales, and the degree of relative success or failure for those initiatives which are drawing upon ICT as a tool (Huws *et al.*, 1996). This study sets out to explore how such distinctive local geographies might arise by examining how attempts have been made to articulate local networks with wider flows of production and consumption (Marsden, 1999).

1.3 The organisation of the study

The study arose from an initial interest in the phenomenon of 'rural telework', a catchall phrase which conceals more than it reveals. Having gained popular currency no doubt in part because of its curiously oxymoronic nature - a blending of 'white heat' and *the Haywain* - it is a term which is increasingly eschewed by those actors with a strategic responsibility for ICT innovation and investment, who claim to be adopting a more holistic approach to technically-led social and economic development[7]. As I made my initial investigations into rural teleworking it became apparent that there are many different ways in which rural communities are using ICT. Among the wider set of questions I began to explore were the following: what sorts of people, in what sort of settings, make use of computer-mediated communication (CMC) and for what purposes? How do those actors who are in a position to make ICT available as a resource for rural communities negotiate differing priorities and preferences? How might any subsequent resolution and stabilisation be related to wider hegemonic projects involving the contestation of the British countryside? In short, *how are society, technology and rurality co-constructed in situ?*

Usage of ICT in rural areas, while fixed in the space of modern Britain, is also tied historically to notions of rurality which are archaeologically salvaged from a

disappearing past. Such usage cannot therefore be understood purely in its own terms as a 'consequence' of ICT itself. This is because political struggles that centre upon divergent assessments of the needs of rural communities and the uses of rural space are inextricably linked with the manner of its deployment. The choices that are made and the outcomes that are determined are subject to 'the politics of the rural'[8] (Woods, 1997). Images and symbols are brought to bear upon the processes of socio-technical development, becoming constraints upon the contingency of change. For development agencies rurality may entail notions of marginality and deprivation, whereas incomers to rural communities may harbour their own notions of a rural idyll (Boyle and Halfacree, 1999). In either case, a concomitant vocabulary of inferred problems and preferred solutions impinges upon the trajectory of technical change.

The aims of the study – the route which must be followed if the central question pertaining to the co-construction of society, technology and rurality is to be answered – are set out in Table 1.1. Case studies are drawn from rural parts of the Strathclyde region in Western Scotland, including Kintyre and the islands of Arran, Islay and Jura. The technical choices that have been negotiated in these settings are explored through a detailed analysis of the narratives of a range of strategically placed actors[9] with whom depth interviews were conducted during 1997 and 1998. The stories that unfold relate to a wide range of applications of ICT in the economic sphere (especially tourism) and also for educational purposes.

How are society, technology and rurality co-constructed? The study answers this central question by examining:
1. the extent and variety of uses of ICT in rural Strathclyde; and the spatial patterns that have begun to arise in innovation and investment
2. how technological choices are expressed and negotiated within rural communities and outcomes determined; and the differential power of certain actors in relation to the choices that area made
3. how pre-existing perceptions of rural needs, by those acting both within and without from the rural communities, may help or hinder the deployment of ICT in the region; and how, in turn, technical outcomes change the meaning of rurality
4. how a locality may become 'powerful' or dependent through the interaction of 'globalising' technologies and local social forces

Table 1.1 Aims of the study

Prior to any examination of these case studies, the theoretical terms of reference of the study need to be clarified. In Chapter 2, the roots of contemporary talk of an 'information' society are examined, specifically the claims made by post-industrial, post-Fordist and postmodernist writers, including Manuel Castells. 'Shrinking world' approaches to technology and society may be effective at enhancing critical understanding of the 'changes wrought on society', but they often remain rather opaque in terms of their capacity to *explain* the processes of technical change as experienced at the local level (Kirsch, 1995). The chapter therefore proceeds to a review of recent work in Science and Technology Studies focusing, specifically, upon the Actor-Network Theory of Michel Callon and Bruno Latour and closely related ideas about the Social Construction of Technology developed by Wiebe Bijker. Such work, it is argued, is an invaluable aid to understanding the intricacies of social and technological co-construction as it unfolds in a located context. The theoretical chapter concludes with an examination of recent developments in rural geography, specifically work which has focused upon the meaning of rurality in a post-productivist countryside, the chosen context for this study's examination of socio-technical interaction.

The theories used refute the notion that technology is an unfettered force that 'impacts' upon society, and show, rather, that outcomes are the result of protracted negotiation between actors, who may often have conflicting personal agendas; this can best be demonstrated through the medium of qualitative research and Chapter 3 describes the qualitative research methods employed here. A series of in-depth interviews were conducted with ICT users over an 18-month period in rural Strathclyde, following an investigative pilot survey conducted by telephone. The chapter explains how contact was made with the survey group and how such data were collected and analysed, often in conjunction with material from other sources.

Chapter 3 also explains the rationale behind choosing rural Strathclyde as the study region. The Highlands and Islands of Scotland was the first rural region of the UK to receive substantial new investment in its telecoms in the late 1980s, a key reason for conducting research there. The chapter proceeds to ask whether, in aggregate terms, the region can be viewed as a 'success story'. Current economic conditions throughout the Highlands and Islands region are examined and, following a review of the available evidence, it is suggested that deterministic planning attitudes in the 1980s, as much as a lack of clear governance structures in the late 1990s, have

prevented much of the region's population from capitalising on the initial phase of 'cyber-boosterism'. The recurring problem of rapid obsolescence amongst new digital technologies is introduced here, and the serious ramifications that it carries for local development agencies.

Chapter 4 begins to draw upon primary data sources, including interviews with representatives of local state agencies, asking how and why the use of ICT varies within rural Strathclyde. This chapter documents the nature and extent of the use of ICT in Arran, Islay and Jura and Kintyre, highlighting the 'local sensitivity' to technical change exhibited by a relatively small geographical area. Following the work of Castells (1996), 'globalising' technologies are placed in a local context. The region's response to the arrival of ICT is shown to be fragmented both spatially and socially and subject to a high degree of contestation. The chapter concludes that a reflexive relationship is indeed evident as ICT, in turn, is seen to be providing an important arena for the practice of local politics and new forms of rural governance, an important aspect of the co-construction of technology, society and rurality.

With Chapter 4 providing a comparative 'over-view' of the region and of the broader structures within which local action is taken, emphasis now shifts to a series of 'micro' studies. This is an approach which recognises the importance of 'local sensitivity' in relation to the trajectory of technical change and the inherent difficulties that lie in trying to understand why some rural areas respond more rapidly and more effectively than others to the opportunities of the 'information age'. Chapter 5 looks in detail at the development of a linked series of ICT initiatives on the island of Islay since the late 1980s, beginning with the Community Teleservice Centre (CTC) - or 'telecottage' - launched by the Highlands and Islands Development Board. The competing visions and ambitions of different actors are examined and are argued to have had a retarding effect upon the project.

An important tenet of technology studies is to retain some degree of symmetry between success and failure (Bijker, 1995a). Whereas the telecottage struggled to attain any degree of durability - as a result of the *conflictive* discourses of rurality that different actors brought to bear upon it - Chapter 6 examines the *co-operative* practices that have enabled the primary schools of Islay, in conjunction with neighbouring areas of Argyll, to move far ahead of the rest of the UK in their use of ICT and to establish a stable and enduring socio-technical ensemble. Small schools have been linked via an elaborate video-conferencing system since 1996, whereas

most primary schools in the UK are only just beginning to make wider use of ICT under the National Grid For Learning (NGFL) initiative. This chapter also begins to critically examine the degree to which, as they have become more ambitious, local education providers have had to enlist the support of a much wider networks of actors. External appeals for financial and technical support entail a loss of local autonomy, a paradoxical effect of a technology intended to buttress local interests.

How has ICT enabled teleworking to develop in the region? What functional relationships are developing between local teleworkers and wider environments and are they sustainable? The theme of external *connectivity*, and the rurality that it promotes, is continued in Chapter 7. This chapter draws upon the experiences of those members of the survey group who rely upon ICT to provide services to individuals or organisations beyond their local Travel-To-Work region. Drawing upon the work of rural geographers such as Terry Marsden, the chapter examines the articulation of local networks with external circuits of production and consumption and asks how such outcomes have been re-negotiated during the 1990s as a result of new rounds of technical development. Despite the small number of cases that exist in the Strathclyde region, it is argued that a 'collective experience' is discernible and that this highlights the complex position that rural areas occupy with respect to the wider flows of the information economy. Further, it is shown that the ambiguous position that some teleworkers occupy, in relation to their local economy and society, poses a challenge to the notion that telework is a solution to rural problems (DoE, 1995).

The notion of ambiguity is explored further in Chapter 8, where ICT is presented as both a catalyst and a means for challenging officially sanctioned production-consumption relationships. The introduction of ICT to the Isle of Arran has been framed by a 'crisis' in tourism, to which the Internet is perceived to be a 'fix' of sorts by some local actors. However, there is conflict over the manner of representation of the island which is achieved through the use of this new medium. Informal actors, reflecting their deep-set dissatisfaction with the recent re-organisation of local government structures, have challenged the ideas and imagery that are employed by 'formal' regional agencies in tourist literature. The Internet provides private citizens and NGOs with a new medium to promote their own alternative development strategies and visions of island life, widening rather than lessening interpretative flexibility, thereby problematising local governance. The paradoxical nature of the Internet is further highlighted, as it is shown to simultaneously bolster and weaken

local business confidence as hopes of rejuvenation of the tourist sector in Arran are counterbalanced by fears of 'leakage' to other rural areas of Scotland.

Chapter 9 has two major goals, in concluding. Firstly, it sets out to summarise how local, global, technical and social forces have been shown to interconnect in rural Strathclyde. Drawing upon the findings of earlier chapters, a general model is presented of how the creative deployment and use of ICT allows local actors in rural Strathclyde to seek alignment both amongst themselves and with wider production-consumption relationships. The model assumes that there is no simple correlation between technological access and the construction of a 'powerful' (or 'enabled') locality: power is shown to rest in a multitude of locations in the networks that develop, acting both to open and to close them to wider relations. Secondly, the chapter proceeds to ask what, within such a conceptual framework, is the meaning of rurality? The concept of rurality needs to be usefully related to these concerns with power and locality and it is argued that this is achieved by viewing rurality as a set of propositions, or meanings, which constitute *both the context and the outcome* of socio-technical relations as practised at the local level. Finally, it is argued that these findings have direct relevance for the ways in which regional policy-makers think through their attempts to offer technical support to marginal rural areas.

Notes

[1] Diffusion of technologies such as the Internet, Pentium PCs and Microsoft Windows, particularly into domestic markets, accelerated markedly after 1995. High-performance low-cost computers (marketed below the critical $1,000 benchmark in the US) are increasingly within the budget of the majority of families in EMDCs.

[2] Raymond Williams wrote at length on the relationship between society and television, viewing it as a 'symptomatic' technology. In *Television, technology and cultural form* (1977) Williams adopted an inverse perspective to technological determinism by viewing technology as a symptom of social change. In the case of television a strong demand for privatised entertainment preceded the widespread diffusion of the technology into homes. To understand television is to understand the re-negotiation between private and public space, and between the individual and society, which has occurred in the course of the Twentieth Century. A wider understanding must then be sought of the forces shaping this re-negotiation. As Williams explains it, 'People say 'television has altered our world', or 'radio altered the world', or, reaching further back, 'printing altered our world'. And we usually, at first, know what these statements mean. Evident and widespread social effects have undoubtedly followed the use of all these inventions. But then, in expanding the statements in this way, we have already – and sometimes without noticing it – introduced a further category: that of 'uses'. The argument can then go in several directions. It can be said that what has altered our world is not television or radio or television or such, but the uses made of them, in particular societies. Against this, or partly against it, it is then often said that once the invention has been made it will be used, and that the general effects of its use are at least as important, and may indeed be much more fundamental, than more local and more particular applications. There are no simple ways out of the argument at this point' (Williams, 1989, 172).

[3] In actuality the dilemma of technological determinism is probably a false problem (Kranzberg, 1992, quoted by Castells, 1996, 5) since technology embodies society. Society cannot be understood or represented without its technological tools while technology, in a sense, *is* society. At best we can recognise a complex pattern of interaction whose contours vary according to the nature of the technology under analysis, individual inventiveness and the specific cultural and political context in which that technology has been developed, refined and consumed.

[4] Anecdotes abound of IT-related organisations and initiatives set against a rural backdrop. This study is set within the Highlands and Islands of Scotland which is well-known for many pioneering schemes funded through partnerships forged between British Telecom and agencies such as HIE. The DoE White Paper *Rural England* (1995) documents many examples of pioneering projects involving ICT in rural England. The Telework, Telecottage & Telecentre Association for Britain and Ireland currently represents 157 telecottages offering local community access, many of which are rural-based.

[5] The remark is attributed by Castells to a 'well-respected European researcher'.

[6] North Derbyshire TEC, Wiltshire TEC, Suffolk TEC and Business Link Shropshire all run local initiatives aimed at training and skills upgrading in relation to Information Technology. However these initiatives are very small-scale. Wiltshire TEC's course lasts for two days while North Derbyshire TEC's training programme for women claimed responsibility for the creation of only 50 jobs in 1995 (DoE, 1995, 43).

[7] Representatives of state agencies who were interviewed in the course of this study stated that they preferred to avoid using the word 'telework'. As a representative for one local enterprise company, interviewed in 1998, put it, 'Can I tell you one thing... most of us would like to ban the word teleworking. I mean teleworking is a way of doing something, it's not a job. It's like somebody saying I want to be a commuter... I want to be an employee and its actually meaningless. And because it was bantered around so much you now have this awful job trying to persuade people like HIE's press department not to use it'.

[8] Woods (1997) explains that the 'politics of the rural' refers to the deployment of rural images and symbols in political struggles whereas rural politics are simply standard political practices and structures that are located in rural areas.

[9] 'Strategically placed actors' are defined as such either by their ability to steer direct investment or else by their role as active users of ICT in a professional capacity. In later chapters the term 'digerati' is used to denote this group of articulate, technically skilled and influential individuals.

Chapter 2

Wired / wild: a theory of the rural information society

Chapter outline

This chapter is divided into three parts. Firstly, the roots of contemporary talk of an 'information' society, or economy, are examined, specifically the claims made by post-industrial, post-Fordist and postmodernist writers. In each case, new geographies of production and consumption, set against the backdrop of a 'shrinking world', are linked with rapid improvements in communications and information-processing technology. Particular attention is paid to one of the most recent, and geographically explicit, accounts of post-industrial society, *The Information Age* by Manuel Castells. The second part of the chapter proceeds to examine a body of work termed Science and Technology Studies (STS). The work of Wiebe Bijker, Bruno Latour and Michel Callon is shown to aid understanding of the diversity of ways in which ICT can become articulated with localised social forces, modelled as a complex web of involvement and negotiation between human and 'non-human' actors. The final part of this chapter examines the attempts made by rural geographers to accommodate contemporary theories of post-industrial society and STS in their own sub-discipline. The theoretical strands already outlined are thus drawn together and placed in a particular geographical and historical context, namely rural areas of the UK that were previously constituted as 'problem regions' within a global system of industrial capitalism. In this context, 'rurality' may be understood as a specific arena in which the tension between global and local forces, or structure and agency, is played out. Propositions such as the rural idyll or the notion of rural marginality, it is argued, serve as the technological frame for processes of technical change in the contemporary British countryside.

2.1 ICT and society: perspectives of change

During the last twenty-five years there have been persistent claims that Western nations and countries in certain other regions, notably Pacific-Asia, are entering a new era of history, fuelled most recently by rapid advancements in the field of ICT. Following Kumar (1995), three varieties of 'epochal' theory can be identified: post-industrialism, post-Fordism and post-modernism[1]. What distinguishes the various perspectives is the causal framework within which a new technology/society relationship is modelled, specifically the extent to which a 'social shaping', as opposed to a technologically deterministic, approach is taken.

It is generally true to say that post-industrial theory adopts a deterministic and evolutionary approach to society, typified by the idea that recent changes can be seen as a 'new industrial revolution'. Post-Fordists, on the other hand, emphasise the relations of production rather than merely the forces of production (Kumar, 1995, 37). Here, ICT loses its neutral character and is more prominently placed within a matrix of social forces that determine its uses and applications. Although post-Fordism is associated with the political left, this does not necessarily entail a pessimistic view of current affairs. Indeed, the inherent flexibility of both the forces and relations of production anticipates a postmodern view of a social structure and of modes of thought that are fundamentally more open to transgression. Here there are new opportunities for marginal groups to re-locate in the political centre of society (Butler, 1990; Hartsock, 1990; hooks, 1991; Bondi, 1993). Post-modernity is, however, distinguished from post-industrial theory and post-Fordism by its emphasis on the consumption, and not merely the production, of culture (Jameson, 1984, 1991; Harvey, 1989).

The intention of this section is not to consider the validity of these theories in any great detail, a task that is clearly beyond the scope of a single chapter of any thesis. The purpose of mounting a systematic excursion through each of the three paradigms is to introduce key concepts and definitions and to ground them in a history of recent thought within social science. It is intended that this should raise some initial questions regarding the relationships that might exist between new information and communications technologies and rural areas such as the Highlands and Islands of Scotland.

2.1.1 When technology leads society: post-industrial theory

The original post-industrial idea was advanced by Daniel Bell and others such as Alan Touraine and Alvin Toffler in the early 1970s and has subsequently been restated by many of the same authors as *the information society*[2]. From a historical perspective, Bell was hardly the first theorist to attempt to articulate a sense of transition in the economic and social structure of western society. Shortly before the publication of Bell's thesis Clifford Geertz had remarked that the label 'transitional society' appeared to be becoming a 'permanent category in the social sciences' (Bell, 1973). Even the term 'post-industrial' precedes Bell, although he became the best-known proponent of the theory. The post-industrial society belongs to a lengthy theoretical

lineage which includes, amongst others, Burnham's *The managerial revolution* (1943), Rostow's 'post-maturity' society in *The stages of economic growth* (1960) and Dahrendorf's 'post-capitalist' society in *Class conflict in industrial society* (1959).

Politically positioned, for the most part, towards the centre-Right[3], post-industrial theory follows a long tradition of post-Enlightenment faith in human ingenuity and reason, with rationality and progress as its watchwords[4]. As Gibbs and Tanner (1997) have noted, this has often led to an unproblematic adoption of ICT policies by national and local government across the political spectrum. Technologically deterministic in its ontology and most frequently utopian in its outlook, post-industrial theory envisages a society 'improved' by the power of information in the sociological tradition of normative functionalism. Bell's 'venture in social forecasting' specifically focused on five main themes: the creation of a service economy, the pre-eminence of the professional and technical class, the primacy of theoretical knowledge, the planning of technology and the rise of a new intellectual economy[5].

Essentially, post-industrial theory described the shift from goods-producing to a knowledge-producing society with associated emphasis on changes in social stratification, clearly descended from Burnham's managerial society and with ICT clearly playing the vital enabling role. In *The social framework of the information society* (1980), encouraged by the rapid development in information-processing technology since 1973, Bell begins to approach a more radical viewpoint. He now describes knowledge and information as the *transforming agent* of the post-industrial society, 'just as the combination of energy, resources and machine technology were the transforming agencies of industrial society' (quoted by Kumar, 1995, 9). Vivid popularisations such as Alvin Toffler's *Future Shock* (1970) and *The Third Wave* (1981), James Martin's *The Wired Society* (1978) and the writings of Yoneji Masuda, Japan's foremost techno-utopian, have extended the predictive scope of post-industrial theory even further into social and political realms[6].

Masuda (1981) is perhaps the most optimistic scribe of the information society, asserting that the production of information, and not material wealth, will be the driving force behind the formation and development of future society. This forms the basis for his normative vision of a 'computopia' modelled on Adam Smith's universal opulent society in *The wealth of nations* (1776). Masuda hypothesises that the

cognitive creativity of individuals will flourish in this 'global futurization society' in which everyone pursues 'the possibilities of his or her own future, actualising his or her own self-futurization needs by acting in a goal-orientated way' (*ibid.*, 29). Such structural connections are often explicit in post-industrial theory, with transformations in the social realm triggered by the technological revolution occurring beneath. Likewise, Toffler (1970) examines changes in the 'socio-sphere' in his work while Naisbitt (1984) speaks of computers that can 'smash the pyramid' of the old managerial system, thereby introducing horizontal networks of power which, by the nature of their flows, are more egalitarian in nature.

These assertions have not gone unchallenged and post-industrial theory briefly lapsed into relative obscurity towards the end of the 1970s given the vast gulf which existed between its unbridled utopianism and the new cultural pessimism of that decade, as exemplified by *Limits to Growth*[7]. Wilful ignorance of the tradition of historical materialism also results in a fundamental lack of continuity being posited between industrial and post-industrial society when radical social changes are envisaged as resulting from rapid and virtually instantaneous technological transformation. This is a recurring problem with all variants of the post-industrial 'sea-change' (Kumar, 1995). For instance, Beniger (1986) argues that post-industrial theory is in fact attributing to the present trends that have much older origins. The basic structural elements (such as the principles of computer and telecommunications technology) have been in place since 1939 at the very latest. Increases in the speed of such flows have been occurring for well over a century. However, rapid advancements made in the performative capability of ICT during the 1990s, further fuelled by the millennial calendar, have once again led to the idea of some grand historical 'rupture' gaining voguish currency[8].

Post-industrial theory is often subjected to a rigorous Marxist critique that argues that, far from ushering in a more egalitarian age, technological advancement has been responsible for the de-skilling of labour and the production of highly uneven new geographies of exploitation. As Robins and Webster (1987) argue, the information society can be viewed as merely the further application of Taylorism, the principle of 'scientific management', beyond the shop floor. A redefined division of labour, which strategically divorces conception and execution in the design process, results in spatial divisions of labour (Massey, 1984) which are buttressed by ICT. The accumulation of technology has not simply homogenised space, as much post-

industrial literature supposes, but has at the same time served to fragment it. Technology has always revolutionised the forces of production, transportation and exchange, allowing firms to increase surplus value (Harvey, 1982) possibly through the monopolisation of new innovations. The role of technology is crucial to the generation of 'new rounds' of investment (Massey, 1984) and of new geographies of 'have' and 'have-not'. Changes are thus spatialised as components of new divisions of labour and the processes of uneven development (Wallerstein, 1983). This critique of post-industrial theory has, over time, developed into a narrative in its own right, namely post-Fordism.

2.1.2 When society leads technology: Post-Fordism

The theory of post-Fordism is grounded in empirical analysis of regions such as North-eastern Italy, Silicon Valley, Toulouse, Grenoble and the Oxford-Reading-Bristol triangle. In the 1980s industrial trends in these regions could be interpreted as revealing symptoms of a possible shift towards a new phase of industrial history. New patterns of production and consumption have been emerging since the mid-1970s that exhibit a characteristic termed flexible specialisation[9] and which are highly dependent on the new information technology. Post-Fordists, following Gramsci's analysis of Fordism[10], speak of a fundamental transition in the character of capitalism enabled by technological change. The application of computers in manufacturing is vital to the post-Fordist project. Advances in the two primary elements of factory computerisation - computer-aided design (CAD) and computer-aided manufacturing (CAM)[11] - are central to this 'new industrial revolution' (Hudson, 1985). The theory of post-Fordism postulates that such technological changes to the production process have been deployed in response to a failure of capitalism to sustain productivity and growth since the 1960s. The conjoining of technology with society is thus understood as a social process, in contrast to the technological determinism of post-industrial theory (Kirsch, 1995).

In this formulation, technology loses its neutral or inherently progressive character and is put instead within a matrix of social relations that determines its use and application (Kumar, 1995). The social relations in question are framed by the crisis of profitability associated with the failure of the Fordist production process to survive beyond the immediate post-war decades[12]. The failure of 'organised' capitalism demanded the introduction of new measures and the shift

towards a new, more flexible and less vulnerable mode of production, enabled by rapid developments in computer and communications technologies. For Lash and Urry (1994) flexible specialisation is symptomatic of a new phase of 'disorganised' capitalism, and the fragmentation of mass production is coincident with the fragmentation of the industrial working class. Other critics have focused on the labour process and the modes of accumulation, regulation and societalization associated with post-Fordism (McDowell, 1991; Cloke and Goodwin, 1992).

The social implications of post-Fordism have been most notably pursued by the New Times[13] writers (Hall and Jacques, 1989) who have argued that post-Fordist changes have benefited the political Right more than the Left[14]. According to this viewpoint, a flexible and de-regulated climate of wealth creation arrived hand-in-hand with a diminished sense of responsibility for those marginalised groups in society who were largely unable to take advantage of the 'new times'. Despite the undeniable failure of neo-liberalism to fully accommodate notions of social justice, there is room for some optimism in the post-Fordist analysis and Sabel (1989) sees a hopeful and humanising development in the return to *localised* craft production, as in the case of north-eastern Italy[15].

However, in terms of the central concern here, namely the reflexive relations of technology and society, the post-Fordist analysis is unsatisfactory given that it ultimately hinges on the assertion that technology is the 'fix' to a crisis, ensuring capitalism's successful transition to a new flexible and de-regulated state (Harvey, 1989). Castells (1996) argues that the speed with which these technologies diffused, and the unforeseen trajectories that many followed, make it hard to subscribe to the notion of purely market-determined changes in technological capacity. The 'mother of invention' argument does not bear critical scrutiny.

For instance, all of the technologies embodied in CAD/CAM followed a common pattern of development. They represented a great leap forward in the diffusion into commercial and civilian spheres of technologies, building on previously existing knowledge as a result of drastically falling prices and increased quality[16]. The microprocessor was only invented in 1971 and was diffusing by the mid-1970s, while the microcomputer was invented in 1975 and under commercial production by 1977[17]. Castells (1996) argues that, although it is tempting to relate directly the formation of the new technological paradigm to the social context of a major economic crisis epitomised by the oil shock of 1973-4, it is in fact untenable. It is unrealistic to argue

that the crisis precipitated dramatic restructuring of the capitalist system on a global scale, thereby inducing a new model of accumulation in historical discontinuity with post-Second World War capitalism[18].

While there is a historical coincidence between the clustering of new technologies and the economic crisis of the 1970s, their timing was too close; 'the technological fix would have been too quick, and too mechanical, when we know from the lessons of the Industrial Revolution and other historical processes of technological change that economic, industrial, and technological paths, while related, are slow-moving and imperfectly fitting in their interaction' (Castells, 1996a). An equally valid criticism is made by Kirsch (1995) who questions the assumption that the effects of innovation are indeed always the intended consequences for which the technologies were produced. Certain technologies that are now taken for granted as 'business solutions' are in fact by-products of the efforts of the shapers of science and technology and which appear to follow a trajectory all of their own. The Internet is a case in point, having originally developed as a military and research community technology with no thought of any commercial application[19].

Post-Fordist flexibility is an undeniably useful analytical tool for the exploration of the ongoing processes of adaptation by firms and organisations to a highly dynamic and risk-laden[20] market. This market situation, it can be argued, is partly attributable to new communications technologies that have vastly increased the rates of circulation of capital and have accelerated the turnover time of products and trends. Conversely, ICT provides the tools that allow organisations to adapt to these changes. The effects of technological change on social life thus feed back to the spatial practices through which technology and social space is produced (Kirsch, 1995). Certainly the social construction of technology which lies at the heart of these arguments is a very different reflection on current affairs compared with the social shaping approach adhered to by the proponents of post-industrial theory. Yet the imperspicuous explanation of technical trajectories, and failure to recognise the unintended consequences of technological change, do indeed, as Castells argues, make the post-Fordist fix 'too quick'.

2.1.3 Technical ecstasy: post-modernity and time-space compression

Post-modernity in its broadest sense embraces aspects of post-industrial theory as well as much post-Fordist thought[21]. Postmodern culture and theory is pre-occupied with

images, signs, networks and spectacles. In common with post-industrialism, the role of information, and by inference the technology to disseminate it, is central to the analysis. In postmodern society the flows of information, facilitated by ICT, allow culture and society to become as one (Lash, 1990). There becomes no distinction between signifier (image) and referent (external reality). Lyotard's (1984) study of the postmodern condition is premised on the view that knowledge has become the principal force of production and the computerisation of society is the underlying reality, while Baudrillard (1983) writes of a world of simulation or hyper-reality in which the power of the mass media and computer technologies constantly impinge upon day-to-day life. In his version of hermeneutics there is endless deferral of meaning in a world of images and signs, an approach which has recently received a great deal of attention from geographers concerned with the meaning of place (Keith and Pile, 1993; Pile and Thrift, 1995). Unlike Bell, with his vision of technically-expanded human capacity, Baudrillard's subject is lost to communications technology[22].

An important postmodern theme, and one which has been central to much recent work in critical geography, is that of the 'shrinking world' and the globalisation of information (Morley and Robins, 1995). Postmodern society links the local and the global through communications, internationalising economies and cultures while consequently renewing local ones with its backwash. This experience of time-space compression, or the 'annihilation of space and time', is central to the work of Harvey (1989, 1993a) although it is not a novel concept. It even pre-dates Marx despite being commonly associated with his writings in *Grundrisse.*[23]

The social and cultural ramifications of time-space compression, in this blend of post-modernism and post-Fordist theory, are still highly debatable (Harvey, 1993b; Massey, 1993b; May, 1994). Marshall McLuhan first stirred this controversy over the social forces at work in the 'global village' in 1964 when he argued that the world had become compressed and electrically contracted so that 'the global is no more than a village'. As oral forms of communications were superseded by the written, so too have electronic communications, through their instantaneous nature, once again signalled the 'de-tribalisation' of societies. A new orality allows village-like encounters but on a global scale. McLuhan echoed the positivism of Durkheim who viewed urbanisation as a process that would de-tribalise and homogenise society. However, McLuhan recognised that panic could be rife initially in a world of total

interdependence. These thoughts are now echoed by critics of postmodernism such as Jameson (1984) who flinches in existential bewilderment at 'the horror' of multiplicity.

It is the tensions between the local and the global, and between the opposing trends of globalisation and localism, that have caught the attention of many writers. Any morning, according to Harvey, we may, should we choose to do so, recognise and acknowledge 'the material connection that exists between us and the millions of other people who had a ...direct and indirect role in putting our breakfast on the table this morning.' (Harvey, 1993a, 12). Such a statement, although avoiding the overt Marxist bent of his earlier writing, remains materially tied to an understanding of how personal geographies operate within the wider field of globalised space relations (Massey, 1993b). To see beyond the boundaries of area to the wider flows of power within which any locale is fixed is essential if the true links between power and place are to be understood.

Technology, the agent of time-space compression, underpins the postmodern condition but must in turn be seen, in part, as an expression of the economic imperatives behind the process of technological change (Kirsch, 1995). However, technology does not simply create time-space compression, it is also the medium through which time-space compression is experienced and, as Massey (1993a) notes, in a partial critique of Harvey, not everyone experiences space-time compression to the same extent. Different groups and individuals are placed differently in relation to these flows and connections, so the issue of power needs to be raised vis-à-vis this 'new' sense of place. It is precisely this connection between locality and power that Manual Castells addresses in his work *The Information Age* (1996, 1997b, 1998).

2.1.4 The information age and the network society

Geertz's assertion that the transitional society has become a 'permanent category' in the social sciences appears now to be more valid than ever, with such a wide range of perspectives of epochal change on offer. One of the most recent and already highly influential models of this 'transition' is Castells' essay that spans three volumes and over a thousand pages. It is an attempt to rationalise the various competing claims of post-industrialism, post-Fordism and post-modernism, and one which explicitly examines the concerns that Massey has raised in relation to postmodern writing on time-space compression, namely the issue of connectivity. Castells observes the

structure and dynamics of 'the network society', a new formation whose roots lie in the convergence of three independent processes. These consist of information technology development in the 1980s, the restructuring of capitalism and the nation-state in the 1980s, and cultural movements whose roots lie in the 1960s. Castells employs nine hypotheses to describe the network society, which are outlined in full in Appendix A4.

Fundamentally, Castells is arguing that we live in a society that, in its dominant processes and functions, is structured around networks. The power of flows in the network prevails over the more traditional forms of power, such as the space controlled by the nation-state that is now frequently by-passed by these flows of wealth, information and crime. Indeed, for states to survive they must increasingly band together multilaterally. The operating unit of modern society is the 'network estate', envisaged as a web of local, regional and national flows. Closing the gap between deterministic and 'social shaping' approaches to technology, Castells argues that these networks could not exist without the technologies that sustain them, but they have not simply arisen as a response to the failings of an older system.

In Castells' analysis, technology and society are also 'framed' by state policies and cultural attitudes, both of which are critical contingent influences upon the trajectory of technical development, thereby moulding newly emergent geographies of enablement and constraint (Marsden, 1999). Cultures matter for Castells because, in a world of global flows of wealth, power and images, the search for identity, collective or individual, ascribed or constructed, becomes a fundamental source of social meaning. People organise their meaning not around what they do but on the basis of what they are, or believe they are (Castells, 1996, 3). Culture often constitutes a highly idiosyncratic and sometimes contradictory set of propositions. For instance, one characteristic of British society is a 'willed coexistence' of very new technology and very old social forms (Williams, 1989, 75). Rurality, it will be argued later, is a social construction that can accommodate such willed coexistence.

Cultures manifest themselves fundamentally through their embeddedness in national institutions and organisations (Castells, 1996). At a time when the nation-state is fashionably dismissed as an areal basis for social analysis, Castells examines in detail the ability or inability of state-societies to master those technologies which are strategically decisive in each historical period. The state can be, and has been in history, a leading force of technological innovation. When the state reverses its

interest in technological development, or becomes unable to perform it under new conditions, a statist model of innovation leads to stagnation because of the sterilisation of society's autonomous innovative energy to create and apply technology (*ibid.*, 10). Here he cites the failure of communist Russia and the stagnation of China in the Industrial Age as his examples. Equally' the disparities within Europe in the Industrial Age[24] are largely reducible to cultural and institutional conditions as much as economic and technological.

> What must therefore be retained for the understanding of the relationship between technology and society is that the role of the state, by either stalling, unleashing or leading technological innovation, is a decisive factor in the overall process as it expresses and organises the social and cultural forces that dominate in a given space and time. To a large extent, technology expresses the ability of a society to propel itself into technological mastery through the institutions of society, including the state (*ibid.*,13).

Given sufficient technological capacity and access to large integrated affluent markets, 'success' is determined by production costs (land costs, taxes, environmental regulations) and the political capacity of national and supranational institutions to steer the growth strategy of those countries or areas under their jurisdiction. As part 2.3 will show, long-standing concern with rural areas within the UK and within Europe, and the sedimentation of a discourse in which they are constituted as 'problem' regions, has decisively shaped the manner in which technology has been promoted in those areas by state institutions and, to a certain extent, private sector capital. Such insights will be central to the analysis of technical development in rural Strathclyde. How might local use of ICT be related to the activities of the state and how, in turn, are such activities related to the cultural framing of rural problems and perceived solutions? As Castells (1996, 102) summarises it:

> States are the expression of societies, not of economies. What becomes crucial, in the informational economy, is the complex interaction between historically rooted political institutions and increasingly globalised economic agents.

2.1.5 The information age: a new revolution?

The theories covered here certainly over-lap with one another with certain key themes – information technology, globalisation, decentralisation, diversity and social atomisation – figuring prominently in all cases. In each account ICT has significantly, and at times fundamentally, affected the labour process and working practices of most societies. In turn this has helped to determine new social and cultural relations wherever technology has been deployed. Whether this is directly

comparable to the social changes associated with the industrial revolution proper and the widespread secularisation of the work force that ensued is debatable, but the changes are significant nonetheless. However, what remains clear is the fact that not everyone is affected to the same extent by this new order, as both Massey and Castells have reasoned. There are 'black holes' of social exclusion within this new network society. Given their long history as problem regions, many rural areas might be expected to exhibit signs of such spatial differentiation, both within and between themselves.

From a wide range of perspectives and political persuasions, technology is fundamentally involved in the formation of new forms of social interaction, local micropolitics and geographies of production and consumption. At times such changes have been naively presented as straightforward (and largely positive) effects of the technologies in question. At other times, 'shrinking world' approaches have called into question the local context in which technological and social interaction takes place. In the next section the focus shifts even further towards this notion of a *technological frame*. Recent research in technology studies provides the basis for a more detailed structure to model the social construction of technology in place-specific circumstances. This is essential groundwork for later chapters of the study which examine how the history, cultures and political institutions of particular parts of rural Scotland, acting in conjunction with globalising economic and technical forces, help to determine a range of socio-technical outcomes such as telecottages, teleworkers, and virtual classrooms.

2.2 Technology studies

Broad 'global' shifts, as discussed above, certainly have an important place here but this study's principal concern is with social and technical decision-making in a local context. As Marsden *et al.* (1993) have commented, 'middle-level' concepts are needed to 'close the gap' between global trends and changes witnessed at the local level, given that the forces that impinge upon local decision-making operate at many different spatial scales. In the case of rural Scotland, for instance, these may be sub-regional (Local Enterprise Councils), regional (Highlands and Islands Enterprise), national (including both initiatives developed in Holyrood and legislation direct from

Westminster) or international in their origin (transnational influences include the corporations that are now rushing to develop their Internet resources).

Geographers working both within the rural sub-discipline (Marsden *et al.,* 1993; Murdoch and Marsden, 1995; Murdoch, 1997a, 1997b; Boyle and Halfacree, 1998) and without (Bingham, 1996; Hinchliffe, 1996; Thrift, 1996; Whatmore and Thorne, 1998) have begun to recognise the value of what Mackay (1995) terms the 'micro' school of technology studies as a heuristic device which is capable of closing the ontological and epistemological gaps that exist between the local and the global and between structure and agency. The practitioners of these 'micro' studies refer to their own work as STS (Science and technology Studies) or SSK (Sociology of Scientific Knowledge. There are 2 main approaches evident within STS[25]: actor-network theory (ANT) and the social construction of technology (SCOT). Although there are marked philosophical differences between the approaches favoured by the more radical proponents of both schools of thought, they share a great deal of common ground that can usefully be brought to bear upon a located analysis of rural ICT:

- No assumption is made whether the social or the physical world (comprising both technology and nature) is the dominant force shaping socio-technical relations; no *a priori* assumptions are brought to bear upon the data. This contrasts with the 'structural' theories outlined above which vacillate between technologically deterministic and 'social shaping' approaches to technology and society.

- Consideration is always given to *contingency* and *context* - both vital concepts when conducting an analysis at the local scale, but not incompatible with the discussion of larger 'structures'.

- The gap between 'local' and 'global' theory can be bridged in a novel way through the use of metaphors such as 'the network' or 'the seamless web'.

- Rurality, viewed as a frequently contested social construct rather than as a set of statistical criteria, can also be conceptualised as an outcome of the interaction between social and physical worlds rather than simply as a pre-given category. Ideological constructs, and the power relations that they embody, are often quite malleable and respond to the activity that surrounds them.

At first glance STS studies serve as an antidote of sorts to the hard determinism of structural approaches to science and society. Certainly unmediated technological determinism, a model of change requiring researchers to measure the social impacts of 'hard' technological forces, has been particularly vilified by practitioners of social science over the last couple of decades, many of whom subscribe to the maxims of the 'micro' school (Cockburn, 1992)[26]. However, as Latour (1993) has argued, the reaction to technological determinism sometimes sets in place an equally inadequate conception of the relation between people and things. Science becomes a simple 'reflection' of social relations with a strong technological force now acting upon a weak society, as with neo-Marxists analyses that portray technological choices as an expression of class interests. In either case highly stable boundaries have been proposed which may serve to obscure a more complex set of socio-technical relations.

STS can be more properly regarded as an attempt to overcome the 'false dilemma' of technological determinism following the ontological premise that, quite simply, technology *is* society and society cannot be understood or represented without its technological tools (Bijker, Hughes and Pinch, 1987; Kranzberg, 1992; Castells, 1996). The binary distinction between the social and the technical is avoided as attention shifts to the *interface* between human and technical artefact (Graham and Marvin, 1996; Shields, 1996). It is an interpretative approach which is being widely adopted throughout the social sciences as rapid advancements in the fields of information technology stimulate academic interest (Jasanoff *et al.*, 1995; Kirsch, 1995; Bingham, 1996; Adams and Warf, 1997; Kitchin, 1998).

2.2.1 Language and role-playing: the metaphors of Actor-Network Theory

Bruno Latour and Michel Callon's actor-network theory (ANT) proposes a relativistic approach to the study of science and technology which, according to Latour (1990, 1993), must ultimately be contextualised within a wider-ranging analysis of the dichotomous conceptualisation of nature and society that has developed in Western civilisation. Championing relativism, in itself, is not novel - Kuhn challenged the objectivity of scientific knowledge in the 1960s - but Latour has developed new ground rules for examining the context of knowledge production and truth-claims. Actor-network theorists have described their work in terms of a 'materialist semiotics' which attempts to understand how one privileged trajectory of meaning is built out of

an indefinite number of possibilities (Akrich and Latour, 1992). A materialist semiotics is concerned with how all sorts of bits and pieces - bodies, machines and buildings - are associated in attempts to build order. None of them are privileged above the others and all have agency (Bingham, 1996).

The concept of *networks* is central to the analysis. Networks are formed through the interaction of actors, a category that includes not only people, groups of people and organisations but must also be extended to embrace 'nonhumans' in Latour's analysis. Callon (1991) defines an actor as an entity that more or less successfully defines and builds a world filled by other entities with histories, identities and interrelationships of their own. Each actor has a role to play within a network. This role consists of working to associate such disparate entities as human, texts, and money to form a seamless and coherent world whose existence can then be taken for granted. This is the way in which truths are established and maintained. Any entity that builds a world around it can therefore be called an actor. In this sense, an actor - whose role it is to put other intermediaries into circulation - is also a network (Law and Mol, 1995). Networks, in turn, can be seen to be composed of *roles*. The story of Thomas Boyle's experiments is a cornerstone of STS pedagogy, demonstrating how this practice of 'world-building' was achieved through the enrolment of ever more numerous actors – both humans and non-humans – to support a world-view that was quite irreconcilable with Hobbes' conception of the socio-political 'Leviathan'[27].

Before turning to the mechanics of network construction, Latour' s insistence on granting agency to nonhumans - a highly novel aspect of his broader thesis on nature and society - requires some further clarification, as it is subscribed to in this study. Both technology and physical geography are powerful forces that stimulate social action in rural communities. For instance, island communities must lobby for funding to maintain vital ferry links across unprofitable waters. ICT, by virtue of the beguiling promises that it makes, places unprecedented demands upon social agencies who scrabble to forge new partnerships that aim to introduce the technology to remote regions ahead of market forces. Rather than seeing humans and nonhumans as competing for the leading role in shaping worlds (a 'flaw' shared by both technologically deterministic and social shaping approaches in his opinion), Latour treats both categories equally as actors, sometimes referred to as actants[28]. No *a priori* distinction is made between the natural and social world in relation to the role

of subject and object and to the seisin of *agency,* thus precluding any possibility of introducing a 'lived contradiction' into the analysis.

For instance, the separation of nature (physical things) and society makes nature a 'soft' force ('immanent') if it can indeed be mobilised and constructed by 'hard' social forces, as in the neo-Marxist analysis. Society becomes more stable, durable and further reinforces its own transcendence over nature owing to the enrolment of ever more numerous nonhumans for the maintenance of its class structure[29].

However, the same careful distinction between nature and society can also grant nature transcendence over and above society, as in the information society thesis discussed earlier and the once-envisaged inevitability of the 'paperless office'.

Latour (1993, 38-39) neatly encapsulates the recurring 'dilemma' of human relations with nonhumans when he considers the first encounters between European and native American belief-systems:

> You think that the spirits of your ancestors hold you forever hostage to their laws? The modern critique will show that you are hostage to yourselves and that the spiritual world is your own human - too human - creation. You then think that you can do everything and develop your own societies as you see fit? The modern critique will show you that the iron laws of society and economics are much more inflexible than those of your ancestors... They [*the moderns*] hold all the sources of power, all the critical possibilities, but they displace them from case to case with such rapidity that they can never be caught red-handed.

In Latour's analysis, purifying practices define modern philosophy, both radical and conservative.

Actor-network theory is therefore described as an *amodern* enterprise, to distinguish it from the contradictory statements of modernity with its many guises. Latour believes that this is necessary because of the proliferation of hybrids - human / nonhuman entities - in the world. We are in a state of crisis, he argues, which can only be resolved if society can 'slow down, reorient and regulate' the proliferation of 'monsters' - nature-culture hybrids such as the Ozone hole, GMFs and frozen embryos - by 'representing their existence officially' (*ibid.*, 12). A new approach is needed to studying socio-technical relations now that the task of keeping nature and society in separate boxes has become overwhelming. 'Half of our politics is constructed in science and technology,' he continues; 'the other half of Nature is constructed in societies. Let us patch the two back together, and the political task can begin again' (*ibid.*, 144).

The proposed new currency is termed the quasi-object (Latour, 1993), or socio-technical ensemble (Bijker, 1995a, 1997). Attempts are made to avoid talking of the social and *then* the technical (Law, 1991). Ontologically, Latour is keen to avoid falling back into the false dichotomy of linking society and science with countless arrows and feedback loops. He is arguing for a more fundamental relocation which avoids conceptualising every hybrid as a mixture of two pure forms and dialectics 'literally beats about the bush' (*ibid.*, 55). Nature and society are envisaged instead as the twin satellites that revolve around a 'Middle Kingdom' - the collective out of which people and things are generated. This is the object of analysis, the seamless web of interaction (Hughes, 1983). The locale, it will be argued in later chapters, is exactly such a 'Middle Kingdom', envisaged as a network composed of human and nonhuman actors, such as ICT. All must work co-operatively to imbue the collective with power[30] if beneficial connections are to be established with the highly competitive and vertiginous flows of the information economy.

Much of this has clear precedents within Twentieth Century philosophy, namely Foucault's writing on 'the body', Bourdieu's 'fields' and even Althusser's 'continents of knowledge'[31]. However, Latour's interest in studying the processes of *translation* - paths of innovation wherein all of a story's actors, both human and nonhuman, are seen to *co-evolve* - is something of a departure from both structuralist and post-structuralist models. In a similar vein, Callon (1986) has stressed the ways in which all elements of human and nonhuman context and content are simultaneously refigured as networks develop. In common with Latour, he is critical of deterministic beliefs in the linear trajectory of change and of simplified and reified stories told with the immense benefit of hindsight in science museums – the telling of tales of 'truths' that remain hidden from history until the right archaeological tools are brought to bear upon them.

Instead, Callon questions how truths are constructed in the face of competing claims to knowledge. There is no simple social process of ideological domination at work whenever a truth-claim gains general acceptance[32]. The stabilisation of digital technology - as with any other set of beliefs - will only occur over time through the convergence and alignment of different actors, human and nonhuman (Inset 2.1). Increasingly, everyone speaks their own language but everyone else understands them. *Translation*[33], then, is the key to understanding networks and, as Callon (1986, 224) argues, 'to translate is also to express in one's own language what others say and

Inset 2.1 Five moments of translation: the scallop fishers of St Brieuc Bay

Michel Callon has analysed the ways in which a group of scientists attempted to disseminate their scientific knowledge amongst scallop fishermen of St Brieuc Bay in northern France. Moving beyond Gramsci's notion of hegemony, he facilitates understanding of how it is that the interests of a privileged group come to be shared by those who are subordinated to it. Callon outlines five stages (*moments of translation*) of how networks of social relationships come into being and are subsequently sustained. The processes of enrolment are shown to involve not just the simple uptake of knowledge provided by scientists but also a wider restructuring and re-negotiation of interests.

The issue here was the depletion of scallop stocks in the bay and scientists sought to present their knowledge as indispensable to the solution. This key moment, termed *problematisation*, involves the scientists attempting the social construction of a new problem for natural science to solve. From this moment on Callon identifies the scientists, the fishermen and the scallops as *actors* in a story The lead actors - that is the scientists - must now attempt to persuade other actors that theirs is the correct position and this moment is called *interessement*. This is achieved through the recruitment of allies while undermining any competing alliances.

The network comes into operation once *enrolment* has begun. Actors will negotiate how they are positioned within the network with the lead actors attempting to ascribe roles to those they have enlisted. *Mobilisation* follows as the lead actors act to ensure that meanings are fixed and understood throughout the network. The network is now composed of representatives who speak for human and non-human actors. None was given prior to the start of the processes described, all have found their identity as the network has developed. However, if at any point they cease to act in ways which conform to the representations made on their behalf then the power of the network is lost. *Dissidence* is, then, a possible final act. The potential for dissidence depends on the degree to which the network becomes obdurate or retains a degree of 'softness'.

Sources: Callon (1986), Marsden *et al.* (1993), Wynne (1995)

want, why they act in the way they do and how they associate with each other; it is to establish oneself as a spokesman· At the end of the process, if it is successful, only voices speaking in unison will be heard.'

The problematic nature of enrolment

Wynne (1995) is critical of Callon's analysis of the enrolment of actors into networks as it relies upon relatively closed meanings at the outset and leaves little room for ambiguity. Following Inset 2.1, Callon suggests that the scallop fishers 'betrayed' their previous alliance with the scientists. Callon's gestalt relies upon a binary code of membership and the processes of enrolment, as he describes them, appear to be rather monochrome. Truths are, in reality, assessed in multi-dimensional ways and Wynne questions whether the fishermen were ever unambiguously part of the network that is described. This is a point which has a great deal of relevance in later chapters where migrant 'incomers' to rural communities are shown to occupy an ambiguous

position that straddles both local and more 'global' sets of interests. These are important concerns in the context of this study, given the considerable attention that rural theorists are now paying to apprehending the contested nature of the countryside and to the heterogeneity of social groupings that have developed in the post-war years, producing a 'fragmented' sense of rurality.

Several STS writers have attempted to address this issue of ambiguity in greater detail. Susan Leigh Star (1991) is concerned with understanding actors' frequent ambivalence towards technologies and the networks that they constitute. Working towards a 'richer theory of splitting', she considers the notion of 'multiple memberships' in relation to networks, asserting that actors' responses to enrolment often involve only partial commitment. Star has pursued this logic in relation to her own experiences as an occasional user of McDonald's who suffers an allergic reaction to the onions which are a key ingredient in their standardised products and practices (Inset 2.2). Stabilised networks may 'insist on annihilating our personal experience' but in reality they may not achieve this goal (*ibid.*, 48). She is drawing attention to the 'in-between' spaces that exist between the standardised networks and intense personal experience. Similarly, such 'in-between' spaces exist for affluent migrants who relocate to the countryside.

Steve Woolgar, whose work shares much common ground with Latour and Callon, has explored whether the theoretical gains of ANT can be retained while simultaneously pursuing the metaphor of the machine as a text. Just as poststructural literary theorists have questioned the authority of the author to impart a fixed meaning to an audience, Woolgar (1991) explores the notion that technologies are interpretatively flexible.[34] He argues that if the construction of machines can be viewed as a form of writing then their usage is akin to reading. Again, there is ample evidence to support this position in relation to 'unexpected' or 'disapproved' uses of the Internet, such as for specifically pornographic, paedophilic or racist purposes (Whine, 1997). However, in order to maintain ANT's precious balance between humans and nonhumans in relation to notions of agency, Woolgar stresses that the machine is not passive in this relationship - it can be seen to be effectively *configuring* the user.

Inset 2.2 McDonald's, onions and allergies

Susan Leigh Star is concerned with *membership* and *enrolment* with respect to Latour and Callon's ANT. She develops a theory of multiple membership which examines the interaction between standardising technologies and human beings. Her central concern is with power and why certain perspectives win in the construction of technologies and truths. Questioning who is enrolled into and who resists these networks, Star is concerned with 'the problem of standards. She argues that there are always misfits between standardised technological systems, such as those used by McDonalds's, and the needs of individuals, despite the powerful 'chimera of infinite flexibility' promoted by such firms through the provision of ramps for wheelchair access. Such changes, she suggests, are only made when consumer groups arise that are large enough to affect a firm's economies of scale. Star makes three further salient points:

- McDonald's appears in an astonishing number of places - if visible presence is a good measure then they are successful at 'politics by other means' (Star, 1991, 35).
- This has been achieved through the enrolment of eating patterns, franchise marketing, labour pool politics, standardisation and its economics.
- McDonald's screens out a number of clients in the act of standardising its empire, creating a class of McDonald's 'non-users'.

Some truths and technologies, joined in networks of translation, become enormously stable features of our landscape - like McDonald's. To sign-on to such established structures brings the benefits of network externalities - why *not* join in / join the community? However are the conventions of such networks truly stable? A stabilised network, argues Star, is only stable for some. Part of the public stability of a standardised network often involves 'the private suffering of those who are not standard - who must use the standard network but who are also non-members of the community of practise' (Star, 1991, 43,).

Sources: Star (1991), Haraway (1992)

Theories of consumption

Woolgar thus adopts an approach that appears at first to be sympathetic to the notions of consumption favoured by the likes of Featherstone (1987, 1991), with machines mediating the relationship between reader (user) and writer (programmer / engineer). Consumption studies look beyond the structuralism of Roland Barthes and the fixity of meaning associated with the encoding / decoding models widely applied within media and cultural studies during the 1970s and 1980s (see Hall *et al.*, 1980). Cultural theorists have subsequently questioned the levels of engagement that exist between a text and its audience (Brunt, 1992; Fiske, 1992). The roots of consumption studies are to be found as much in the continental traditions of hermeneutics and phenomenology as in the works of Marx, Gramsci and Althusser.

In the 1970s Cultural Studies was heavily influenced by Gramsci's model of hegemony. Brundson and Morley (1979) employed semiotic techniques in a search

for dominant and oppositional readings made by a typical television audience in their *Nationwide* study. Subsequent work on the cultural consumption of technology has developed in tandem with the theoretical developments outlined earlier with respect to post-Fordism and postmodernism. Later work recognises the importance of intertextuality, the extreme fluidity of meaning and the notion of the discursive[35].

A large body of work in media and cultural studies focuses specifically on the domestic consumption of information and communication technologies (Williams, 1975; Hall *et al.*, 1980; Morley, 1986, 1992). The issue of consumption is especially pertinent to the field of information technology where malleable software, which can be customised by the user, defers stabilisation of, say, the PC. Active, creative and expressive actors create interpret or consume the technology in what may be highly idiosyncratic ways. Most recently the PC has begun to be marketed as a photo laboratory following recent improvements in digital photography and printer technologies, adding a whole new dimension of possible modes of consumption.

Work on consumption and 'boundaries' interrogates the subjectivity of the user vis-à-vis information technologies more closely than either Latour or Callon do with their notion of enrolment. ANT clearly acknowledges that successful system-builders are 'heterogeneous engineers' and can move easily between different social domains as they build their networks. However, they pay less attention to the heterogeneity of the other actors that are enrolled into their networks. This leads Haraway (1993, 35) to suggest that:

> Either critical scholars in antiracist, feminist, cultural studies of science and technology have not been clear enough about racial formation, gender-in-the-making, the forging of class, and the discursive production of sexuality *through the constitutive practices of technoscience production themselves*, or the science studies scholars have not been listening - or both.

Mackay (1995) has suggested that studies of consumption, where the use and meaning of a technology can be studied in close relation to the politics of identity, therefore provide a 'natural complement' to STS[36]. Some of the most recent work in SCOT, the other branch of STS, develops the notion of interpretative flexibility even further by grappling more thoroughly with the ambivalence and the flexibility that mark the early stages of network development.

2.2.2 Artefacts and interpretations: The Social Construction of Technology

SCOT approaches to socio-technical relations share much common ground with ANT, while also differing in some fundamental ways. Certainly it would be misleading to suggest that the two approaches are entirely separate entities which can be dealt with formally through some simplified pedagogy. Yet there are some clear grounds for separation. First, and foremost, is ANT's assertion that traditional categories must be dismissed because the social and technical are, in effect, one and the same thing, and cannot be partitioned. Bowden (1995) argues that this aspect of the methodological rationale behind ANT is seriously flawed. The logic that lies behind Latour's search for new words is problematic because it simply does not follow that traditional categories will always be reified and that 'scholars are incapable of remembering that such categories are analytical conventions that do not (and cannot) capture the totality of any phenomenon' (Bowden, 1995, 76). Further, this aim to 'desegregate' has, Bowden suggests, had the unfortunate side-effect of resulting in 'the imposition of an Orwellian newspeak that obliterates any offensive distinctions' (*ibid.*, 77), a point made even more forcefully by Cohen (1997, 345) when he chides Latour for yielding to 'the politics of grammatical control'.

Some social constructivists are also critical of ANT's extension of agency to things on the grounds that the cost of such magnanimity is critical impotence (Collins, 1995; Collins and Yearley, 1992a, 1992b), attributable to the inherent and inevitable conservatism that arises from a ground zero model of reflexivity. As Collins (1995, 295) notes:

> Both for them [*Latour and Callon*] and Woolgar, we must not even say that the social and the natural are socially constructed because that would be to use an element of the dichotomy that is to be explained - the difference between the social and the nonsocial - as the starting point for the explanation.

Collins suggests that as a result the more extreme relativistic beliefs ('radical symmetry') of ANT lead to more conservative analyses of science than 'old-fashioned' symmetry based around a consideration of society and technology's mutual (re)construction of one another.

He argues that ANT cannot make a concrete contribution to the work of technicians or politicians in ways that might be improving. Instead 'what they have to say is that anything might happen given the appropriate "alignment of forces" in the network of undifferentiated humans and things' (*ibid.*, 296). A similar point is made

by Knorr-Cetina (1995) whose work on scientific laboratories draws on a rich tradition within phenomenology, especially the work of Merleau-Ponty. Knorr-Cetina asserts that scientists are reconfigured by the objects they interact with, but the objects themselves should not be constituted as actors. Elsewhere, Hughes (1983, 1986) has adopted the metaphor of the 'seamless web' of shifting alliances between society and technology in his systems approach, but remains very much anchored to the avowedly *human* enterprise of system building.

Bijker (1995a, 1995b) is a SCOT theorist who examines the semiotics of technologies, defining 'working' not as an intrinsic property of a technology but as a socially constructed meaning attributed by specific relevant social groupings. Notably, Bijker is sympathetic to Latour's insistence that nonhumans are cast as actors in network analysis and often considers the ways in which machines reconfigure the user. In his analyses, Bijker uses the word 'artefact' to refer to technology with a clearly defined user group on the grounds that it is a term that collapses social and technical distinctions by refusing the language of objects and machines. The arguments that follow in later chapters in relation to rural ICT are, in particular, informed by Bijker's (1995a, 1995b) theory of technical 'stabilisation', the requirements for which are summarised in Table 2.1. However, one critical point of departure from Latour that is maintained in this study is Bijker's assertion that knowledge is context-specific.

Change/continuity	The conceptual framework should allow for an analysis of technical change as well as of technical continuity and stability.
Symmetry	The conceptual framework should take the 'working' of an artifact as *explanandum*, rather than as *explanans*; the useful functioning of a machine is the result of socio-technical development, not its cause.
Actor/structure	The conceptual framework should allow for an analysis of the actor-orientated and contingent aspects of technical change as well as of the structurally constrained aspects.
Seamless web	The conceptual framework should not make *a priori* distinctions among, for example, the social, the technical, the scientific and the political

Table 2.1 Requirements for a theory of technological development
Source: Bijker (1995a, 13)

In contrast to the complete 'weightlessness' that Latour proposes, Bijker suggests that artefacts are not only shaped by the power strategies of different groups but also form part of the micropolitics of power themselves, constituting the strategies of differing agencies and acting to solidify existing relations. A central adage for this particular paradigm is that the meaning of a technical artefact does not reside in the technology itself. Technologies are socially constructed and only acquire their meanings in the heterogeneity of localised social interactions.

Bijker has repeatedly demonstrated the analytical strengths of such an approach, with reference to such diverse technologies as the bicycle[37] (1995a) and the Dutch polders (1995b) by focusing upon the ways in which different interest groups construct a technological artefact in ways which have meaning for them. By applying materialist semiotics a technological artefact can be broken down into a relatively finite number of different artefacts which have meaning for certain relevant social groups. These are groups that are relevant for the actors involved and are therefore also relevant for the analyst as he or she sets out to explain the development of technical change. Different social groups socially construct any nascent technology in terms that describe 'working' for that group, most likely in a language of perceived problems and solutions. These are socially constructed assessments rather than intrinsic properties of the artefact. Following this line of reasoning it may be supposed that rural ICT will be broken down into a number of different artefacts *in situ*, each of which holds meaning for different user groups.

By placing such an emphasis on contingency Bijker is not suggesting that *anything* is possible. Rather, he argues that any theory of technical development should combine the contingency of technical development with recognition that it is structurally constrained. In other words theory must strive to combine the strategies of actors with the structures by which they are bound[38]. Society does not determine technology but it can suffocate its development. Following this line of reasoning ICT is not to be boundlessly open to interpretation in rural areas by its users. It is more reasonable to assume that the contingency of technical development will be structurally constrained by social and economic factors and the nature of the relationship between the local state and society.

This resonates with the arguments of Castells (1996) that have been outlined above. The central thrust of his thesis of 'the network society' is that to understand the modern world is to understand the triangulation of a new technological paradigm,

organised around information technology, with existing geographically-bounded cultural formations. For instance, the shaping of personalised devices, interactivity and networking owes as much to the libertarian spirit of the Western seaboard of the USA in the late 1960s as it does to the technologies themselves. In summation he argues that 'technology (or the lack of it) embodies the capacity of societies to transform themselves, as well as the uses to which societies, *always in a conflictive process*, decide to put their technological potential' (Castells, 1996, 7, emphasis added). Rurality, as it is expressed in any particular locality, is also a cultural formation that frames socio-technical interaction. Following this line of reasoning, adopted jointly from Bijker and Castells, it seems reasonable to ask who are the relevant social groups working with ICT in rural areas, and what is their motivation? What effect may interpretative flexibility, as it relates to the opportunities presented by ICT, have on the net transformative 'capacity' of such areas?

Bijker uses the term *technological frame* to describe the relevant social groupings and the structures within which they are bound and in turn help to cement. A technological frame provides the goals, the ideas and the tools needed for action, comprising of all the elements that influence the interactions within relevant groups and lead to the attribution of meanings to technical artefacts - and thus to constituting technology (Bijker, 1995a, 123). Placed on the crossroads of social-interactionist and semiotic traditions, the technological frame guides the interaction. It is built up when interaction around an artefact begins, and is located in the interactions between actors: in a sense it is analogous to Foucault's understanding of discourse.

Following the construction of an artefact, the forming of a relevant social group and the emergence of a technical frame, the process of stabilisation can begin. Not all of the artefacts within the technological frame will survive - as the trajectory of technological change is followed both 'successes' and 'failures' are witnessed. Latour's archaeologies of technical artefacts have similarly illustrated how what we know as stabilised technical artefacts (such as the everyday door hinge) are in fact born of negotiation and struggle between actors (Latour, 1988). Closure leads to decrease of *interpretative flexibility* - flexibility in the number of different meanings which can be given to the same artefact by different groups. Over time one artefact becomes dominant and others cease to exist. Stabilised technologies thus emerge from processes of choice and negotiation between relevant social groups with interpretative flexibility tending towards closure over time.

However, as Mackay (1995) notes, there are still certain potential deficiencies in Bijker's version of social shaping theory. Firstly, to suggest that the story is more or less over once the technology has reached the end of its social shaping neglects the issue of consumption and the unintended uses that may still result.

> Technology leads a double life, one which conforms to the intentions of designers and interests of power and another which contradicts them - proceeding behind the backs of their architects to yield unintended consequences and unanticipated possibilities. (Noble, 1984, 325)

Obsolete artefacts may return into vogue, perhaps in the context of gentrification chic. Equally, well-established artefacts can always become subverted - Anthony Burgess mocks the respectability of the bowler hat to great effect in *A Clockwork Orange* (1962). Again, the inroads made by Cultural Studies theorists into the nature of consumption might be considered a useful 'antidote' of sorts to a shortcoming which is found throughout STS literature.

Edge (1995) has argued that the SCOT approach is especially well-suited to the study of information technology where many different social and political groupings have seized upon it as a panacea to a variety of perceived problems. Certainly, at this early stage of technical development ICT is subject to a high degree of interpretative flexibility in rural areas. That is to say, different interested parties and user groups will socially construct a technology such as the Internet in ways which they regard as potentially beneficial to their own existing social networks in the absence of a more stable and hegemonic set of meanings and goals. Some constructions may eventually be successfully translated into sustainable activities. Others may amount for little more than short-lived technological 'detours'.

2.2.3 Technology studies and the geographical imagination

Actor-orientated approaches to modelling socio-technical relations have, *en bloc*, much to recommend their use in geographical analysis, particularly in respect of the new possibilities offered to bridge the conceptual gap between questions of locality and of globalisation and also with respect to the close convergence of physical and human agency in fields such as environmental planning or landscape studies (and associated work examining the construction and contestation of rurality). The emphasis on contingency, context and situated knowledge, which figures in both ANT and SCOT studies, is certainly congruent with the 'cultural turn' in geography and the

renewed interest in interpretative approaches to spatial relations. STS can also claim the attention of the geographical imagination on other grounds, most obviously through its use of spatial metaphor. Concern with boundary work and the mapping of networks, involving pronounced use of spatial metaphors[39], inevitably appeals to the geographical imagination (Smith and Katz, 1993). Moving beyond metaphor, though, there are many other areas of geographical analysis for which STS has more direct relevance, three of which are especially pertinent to this study.

Firstly, STS provides continuity across different spatial levels of analysis. The novel route towards connecting the global with the local proffered by network theory - usefully meshing together generality and singularity, structure and action - provides the promise of real theoretical gains within human geography. Marsden *et al.* (1993) identify ANT in particular as a source of 'middle-level concepts' which might help close the gap between various scales of geographical analysis. *A priori* distinctions between macro and micro can be abandoned with STS. The power of translation networks - of 'politics by other means' - is the way in which scientists 'collapse the distinction between the large and the small scale by forcing macro-actors through their laboratories' (Law, 1986, 33), as displayed in the case study of Boyle[40]. For Murdoch (1997a, 331) there is no difference between the local and global scales of analysis, merely recognition that 'longer networks can simply reach further than shorter networks'.

Law (1987a) recognises that this methodology is 'uncomfortable' for those who hold that there are differences *in kind* between macro and micro phenomena and that both require different styles of analysis. However, he argues that there is no *a priori* way of distinguishing between important and unimportant events, much as chaos theory emphasises the importance of the butterfly effect. Law (1987a, 421) applauds Thomas Hughes' maxim of 'following the actors' by treating large and small systems in the same terms, noting that Hughes 'happily moves in the same paragraph between the technical jottings of an entrepreneur, a power station and its turbines, and the political and economic context'. Again, this is mostly congruent with Castells' (1996) propositions for 'the network society'.

Secondly, STS can usefully inform contemporary studies of local governance. Many STS scholars pay special attention to ostensibly less powerful non-governmental actors (Cozzens and Woodhouse, 1995), a practice which has special relevance to those geographers with an active interest in contemporary issues of

governance. Increasingly, the role of NGOs, often acting in partnership with formal agencies, is cited as a defining characteristic of modern power structures (Imrie and Raco, 1999). In the era of the 'hollowed-out' state (Jessop 1994; Amin and Thrift, 1995), political process must be analysed with an eye for detail at many over-lapping spatial scales, the apprehension of which, argues Law (1987a), is a defining strength of STS. Agency also arises as a key concept within this context, conceptualised as a precarious and often temporary achievement (Pile and Thrift, 1995). Organisations continually disband or re-unite, as Castells (1996a) notes when he describes the network society as a series of temporary alliances and arrangements and pieces of firms which form and reform to fulfil specific tasks. As agents, they occupy a temporary position in a fragmented social world, which is itself the result of endless attempts at ordering (Law, 1994). According to Pile and Thrift (1995), actor-network theory makes its real contribution to social science by focusing on the *processes* of mobilisation that allow agency to be achieved.

Thirdly, STS prompts a careful re-evaluation of the characterisation of socio-technical relations in marginal areas in geographical literature. Shrum and Shenhav (1995) make some useful comments in particular on the literature on science and technology in relation to work on less developed countries. This has some relevance for the empirical grounding of a study such as this (in rural Scotland), given McCrone's (1992) comments on the impoverished practice of 'importing' Third World studies to theorise relations between England and the Celtic fringes. In particular, McCrone has shown that the voguish Marxism of the 1970s, rooted in development studies, constituted the principal theoretical standpoint for any discussion concerning technology in Scotland in the 1970s and 1980s. Talk of branch plants and oil often segued into a militant critique of spatialised class relations.

Technology has always figured prominently in geographical analysis of the processes of development, viewed as the prime mover of social change, the arbiter of take-off. Often analysis in this vein has been conducted at the expense of any consideration of context-specific social, cultural and political structures. Shrum and Shenhav (1995) argue for an approach to science and technology that examines how context-specific knowledge and practices interact with a set of globally distributed social interests. Notions such as technological dependency and technology transfer need to be more sensitive to local conditions. By querying pre-formed functionalist

categories such as centre and margin, or core and periphery, a more sensitive model of the production and consumption flows of the information age may be attained.

2.2.4 Distribution and power

Law (1986, 32) argues that to study translation networks is to study power, on the grounds that that actors are concerned to articulate their own conceptions of the world: 'in short, they are concerned to translate'. However, the character of such forces cannot be established before a study begins. Power becomes envisaged in Foucaultian terms as 'an outcome of the deployment of local strategies, rather than a substance that is definitively and finally allocated between pre-constituted social groups before the social game starts' (Law, 1987a, 421). Similarly, for Bijker the technological frame, once constituted, constrains the actions of its members and exerts semiotic power through the fixity of meanings of artefacts, following closure and stabilisation. It is this fixity of meaning that represents power (Bijker, 1995a, 264). However, the power of micropolitics, exerted by highly included actors, can always challenge this stabilisation. Following theories of consumption, even social actors with a low degree of inclusion may be able to subvert the use of a technology.

This conception of power clearly contrasts with social shaping approaches to society and technology, such as the neo-Marxist work associated with the post-Fordist school, which tends to place relatively stable social categories, such as class interests or gender, at the centre of its analysis (Massey, 1984; Hall, 1987). More recently, however, Law has accepted that the refusal of STS scholars to concede any ground in this latter direction has resulted in a failure to engage adequately with traditional sociological concerns with *distribution*. In particular ANT's methodological practice of 'following the actors' (Latour, 1987) may render certain distributions invisible if they are of no concern to the lead actor who is being followed. A rather heroic theory of agency is often difficult to avoid in STS which means that concerns that do not impinge upon the 'big and powerful' may not come to light if they are the only actors who are followed. In a previous article, Law (1987, 13) had defended this practice precisely because if they are 'bigger and more powerful' then their modes of network organisation will be the most effective. 'So if we want to understand the modern world,' continues Law, 'it does not do to look at failures. Rather we should look at successes - or, perhaps, at heroic failures.'.

Haraway (1997) has shown that this position is simply not sustainable in relation to issues of gender when (re)considering the story of Hobbes and Boyle. Women do not figure at all in Shapin and Schaffer's (1985) account nor Latour's (1993) refinement of their argument. They do not investigate how this 'world of scientific gentlemen'[41] was instrumental in sustaining existing gendered ways of life.

> Insofar as the experimental way of life built the exclusion of women, as well as of cultural practices and symbols deemed feminine, into what counts as the truth in science, the air pump was a technology of gender at the heart of scientific knowledge... The effect of the missing analysis is to treat race and gender, at best, as a question of empirical, performed beings who are present or absent at the scene of action but are not generically constituted in the practices choreographed in the new theatres of persuasion. (Haraway, 1997, 28-29)[42]

Law (1991, 3) admits that, having tackled the problems of epistemology (unpacking the status of knowledge-claims) and heterogeneity (unpacking the stuff that binds society together), STS has at times paid insufficient attention to classical sociological concerns with *distribution*. In an attempt to improve understanding of the mechanics of traditional models of socio-technical change, STS scholars have sometimes lost sight of more fundamental concerns within the social science that relate to notions of inequality, social justice and the location of power. This leads Cohen (1997, 340) to criticise on the grounds that 'the elevation of the network into the position of a privileged focus of intellectual inquiry turns intellectual work from analysis to management'. There is an apolitical slant to Latour's amodernism which contrasts pointedly with current growing concerns with research ethics and the legislative role that social science can play (Sayer and Storper, 1997; Marsden 1999). As both Star (1991) and Haraway (1992, 1997) have argued, the politics of enrolment deserve more careful scrutiny that is often the case in STS.

> I believe it less epistemologically, politically and emotionally powerful to see that there are startling hybrids of the human and nonhuman in technoscience - although I admit to no small amount of fascination - than to ask *for whom and how* these hybrids work. (Haraway, 1997, 280, emphasis added)

It is, perhaps, especially difficult for STS scholars to make reasoned value judgements, much less policy recommendations, because of their own 'prime directive', which states that all knowledge - including their own social research - has no greater claim to objectivity than any other set of values or practices. The reflexivity that STS has itself spawned 'comes home to roost here', as Edge (1995b, 17) comments. If it is argued that 'facts' are essentially inseparable from 'values'

then an explicitly *normative* model of social science is in no way achievable. Friedman challenges the reflexivity of STS, as epitomised by Shapin and Schaffer's (1985, 344) much-quoted maxim that we must 'put ourselves in a position to realise that it is ourselves and not reality that is responsible for what we know'. 'To my ear,' argues Friedman (1998, 264), 'these professions of responsibility ring hollow,' adding that:

> The normativity of one's own standards is now explicitly reduced, from this point of view, to the status of an otherwise arbitrary 'preference' for the practices of one's own particular social group

Friedman (1998, 269) concedes that there are 'good reasons' behind the contemporary fascination with relativistic philosophy which arise from the mutual interaction between the historical evolution of scientific philosophy and the historical evolution of the sciences themselves. However, he also notes that this is a debate which has increasingly become 'bogged down in tortuous metaphysics'. Instead, the real point of social science, argues Haraway (1997, 267), is to make 'situated knowledge claims about the world and upon each other' and true critical reflexivity 'does not dodge the world-making practices of forging knowledges with different chances of life and death built into them' (*ibid.*, 37). She criticises social constructivists such as Latour and Bijker on the grounds that their resistance to accept 'social' explanations of 'technical 'practice, while laudable, has blinded them to the consideration of matters of ideology or class structure.

> They never ask how the practices of... systems of structured inequality get built into and out of working machines... (They) have stopped dead at the fearful seas where the worldly practices of inequality lap at the shores. (Haraway, 1992, 332)

2.2.5 Technological theories in practice: researching the rural

Mindful of the critique outlined above, this study does not unquestioningly ape either the epistemology or ontology of any single variant of STS. There is, in any case, considerable overlap between its many branches and each has its relevant strengths and weaknesses when viewed through the lens of human geography, a discipline with its own canon of theories, practices and internal contradictions. Several key insights are drawn from STS that can aid the analysis of socio-technical relations in rural areas. Callon's notion of *enrolment* helps illuminate the ways in which the governance of ICT might be conducted locally, as certain actors, with varying

resources, set about the task of aligning other actors, human and nonhuman, with their own interests. Latour's insistence at this juncture that both *nonhuman* as well as human actors are treated equally is an important reminder of the considerable influence that ICT has in stimulating new partnerships and policy initiatives. Star's concerns with *boundary work* is a reminder of how complicated and at times contradictory the role of incomers may be in such rural environments, and Bijker's notions of *interpretative flexibility* and of the *technological frame* serve to emphasise highly context-specific aspects of rural change. Ideas from studies of consumption draw attention to the 'unintended' uses that are made of technology and the effect that this can have on established power relations. Several final observations can also be made here in relation to STS that are especially pertinent to contemporary debates in human geography and rural studies in particular.

- Marsden *et al.* (1993, 140), in an early appraisal of STS in an explicitly geographical context, arrive at similar conclusions to Bijker (1995a). They stress their belief that, despite the insistence of Callon and Latour that power is an emergent property of networks, those who possess superior sets of resources (both material and cultural capital) are 'able to act more easily on their formulations than those who do not'. In a rural context they highlight entrenched property rights as a key resource linked to established sets of power relations. However, as they note, it would be a mistake 'to assume that the processes of resource acquisition and domination necessarily go hand in hand'. A similar position is adopted in this study, one which is thoroughly tested in Chapter 8 when it is shown that individuals on Arran are using the Internet to challenge 'official' representations of the island in cyberspace.

- Much as Philo (1992) has criticised rural geographers for uncritically mapping the ruralities of highly visible, affluent members of rural communities, any analysis of ICT in a rural context, given its early stages of growth, must inevitably begin with the activities of lead actors. It is they who possess the capital, skills and other resources to guide technical development. However, it is still possible to remain mindful of Haraway's comments in relation to those groups whose voices are not yet heard and who will not necessarily be encountered in transit as the lead actors

are followed around. Subsequently, in this study attempts have been made to use a highly inclusive methodology. For instance, as Chapter 3 explains, local media were closely monitored for viewpoints other than those that came to light in the interviews conducted with lead actors.

- Finally, and most importantly from the point of view of this study, STS can usefully be applied to the analysis of the social construction of rurality, understood as those diverse sets of meanings which are attributed to rural space by vying agencies. Bijker (1995a, 1995b) presents the technological frame as an arena for the placement of the micropolitics of social negotiation. Rurality can be envisaged as a technological frame for certain types of local actor-networks – or socio-technical ensembles - as they develop *in situ*. Following the schematic devised by Bijker, ICT may find themselves encoded, much as the countryside itself is, with the desires and aspirations of different actors and interest groups, founded upon their individual interpretations of local needs, problems and perceived solutions. In turn ICT exerts agency upon the groups that encircle it, presenting new challenges to governance structures that may, through the stresses which are consequently endured, serve either to buttress or contest entrenched political interests in the countryside. Micropolitical gestures by disenfranchised individuals operating in cyberspace may extend their influence over time in ways that impinge upon vested political interests. The technological frame, therefore, is not a fixed and obdurate thing. It too is changed through interaction. New ruralities - as the outcome of protracted power struggles involving humans and machines *in situ* - therefore emerge as a product of socio-technical interaction.

2.3 Rural change and the meaning(s) of rurality

Section 2.2 introduced key theoretical models underpinning cross-discipline debates in social science relating to the transition to post-industrial or post-Fordist production, and the associated 'cultural turn' to postmodern patterns of consumption. Whether or not such trends should rightly be considered as a historical 'rupture' of sorts, rural space and society have certainly been greatly affected by this juxtaposition of broad economic, social and political changes as they have occurred over the last twenty-odd years (Cloke and Goodwin, 1992; Marsden *et al.*, 1993; Saraceno, 1995; Marsden,

1992, 1996, 1999). As rural space has become increasingly diversified since the 1970s so too have rural studies entered a period of flux[43]. In response to the broad productive, cultural and legislative upheavals outlined above, the theoretical landscape of rural studies is, like the geography it describes, more complex and diverse than in previous decades.

Two important themes[44] have emerged in rural studies that have particular significance for the field of ICT. The first of these may be termed *production-consumption relations and their governance*. ICT, following Latour (1993), can be described as a powerful actor in the articulation of local circuits of production and consumption with wider external interests. This is as relevant to established rural industries, including farming, as it is to start-up industries relying upon new skills such as web-design. The second theme may be termed *rurality, representation and power*. Much has been made of the Net's 'democratising' attributes and its ability to provide representational space for the culturally (and geographically) marginalised (Warf and Grime, 1997). If, as so much recent rural research suggests, the countryside is a fragmented and contested space, then how might such political processes be played out in cyber-space?

2.3.1 The post-productivist countryside and its governance

The productivist years of the British countryside describe the immediate post-war period ending in the late 1970s - roughly congruous with the final phase of Fordism proper (Harvey, 1989). An agricultural hegemony, maintained by land use and land rights, was further buttressed by politics and ideology that recognised agriculture as a progressive and benign force whose pre-eminent role was accepted and respected. Marsden *et al.* (1993, 68) point to the productivist ideology being left 'obviously in disarray' as a result of growing public concern for the negative environmental effects of certain farming practices and a perceived failure of farmers to live up to the ideals of 'stewardship'. The New Right simultaneously critiqued state-sustained public expenditure in support of the productivist model. Sustained attack on the agricultural hegemony from both these, and other quarters, has subsequently led to a loss of what Cloke and Goodwin (1992), drawing on Harvey (1985), refer to as the *structured coherence* of this earlier period.

Cloke and Goodwin attribute the breakdown of 'coherence' within the productivist countryside to a number of over-lapping influences, including the in-migration of

communities in fringe areas leading to the expansion of consumption and community ranges and the extensification of production and consumption links as a result of service economy growth. Recent migration trends, linked to increased levels of personal mobility and rising levels of affluence for large sections of the population, have certainly led to marked demographic change for rural areas (Townsend, 1993; Boyle and Halfacree, 1998). This has affected not only fringe regions but increasingly the more remote or 'deep' countryside also. The gentrification of many rural areas has impacted upon local economies, especially in those remoter locales where a high proportion of in-migrants have displayed entrepreneurial zeal, especially in relation to the expansion of tourism-related opportunities.

In contrast, urban fringe areas have often assumed 'dormitory' status, with the in-migration doing little to arrest a long-standing trend of local service closure. Rural geographers have examined the social tensions that develop in such situations, especially in regard to property development, and the issue of housing supply. (Champion 1989, 1992). The earliest studies subscribed to a Weberian analysis based principally around class relations (Pahl, 1965; Newby *et al.*, 1978). More recently, the 'cultural turn' in geography has allowed an extended analysis of social relations and counterurbanisation, focusing upon vying notions of rurality and its contestation (Halfacree, 1997).

Post-productivism, as a concept, suggests that rural space is becoming far more diversified and that non-agricultural actors, in addition to making new uses of space, 'are given an opening to construct a rurality in their image' (Halfacree, 1997, 72). The implications for rural research therefore move beyond studying the new uses of rural space to understanding new meanings of rurality, a point that is returned to below in greater detail. Central to these new concerns - both material and semiotic - is the notion of consumption. Counterurbansiation and the opening up of the countryside for leisure activities have, in particular, invited consideration of how the rural may be seen as a site of consumption - a key referent within contemporary cultural studies (see section 2.3, above). Marsden (1999, i) defines the consumption countryside as

> The sets of increasingly diverse ruralities which tie rural space and people to the provision of goods and services which can be consumed by those in and beyond their particular boundaries.

This is a theme that is central to this study given the vital role that ICT can play in linking localities with exogenous interests. Such linkages are crucial to the conceptualisation of the new 'open' spatiality of the consumption countryside - in contrast with the relatively 'closed' productivist countryside (both in terms of functional relationship with urban regions and the degree of interpretative flexibility - or polysemy - of rurality).

The regulation of production-consumption relationships

Concerns with the nature of *planning* for the post-productivist countryside constitutes a second inter-connected strand of rural restructuring theory. Sweeping changes in the attitude of planning agencies towards deregulation, privatisation and free market economics have had some highly visible impacts in rural areas, especially in those remoter regions of the Atlantic fringe with a long history of state-led assistance (McCleery *et al.*, 1987). Substantial cutbacks in public spending followed the high inflation period of the mid-1970s, notably achieved through the abandonment of strong regional development policies. However, the stabilisation of population in many regions during the same decade - following a century of decline in some of the most peripheral areas - provided a useful justification for the cessation of such highly centralised planning initiatives. More recently, a further shift from state-led programmes towards self-help initiatives, with greater emphasis on inward investment and public-private partnership, is in evidence, especially in the 1995 series of rural White Papers (DoE, 1995, Scottish Office, 1995). The emergence of new political times has sparked a great deal of academic debate on the nature of the governance structures which are still unfolding, and which will be further modified by the devolution of the Celtic nations and the emergence of the new English development agencies.

Whether the move away from productivism in the countryside, as with the wider shift away from Fordism, can be characterised as the transition to a fully-fledged new mode of accumulation remains a moot point, as discussed above in section 2.2. However, there are further relevant questions associated with this debate which relate to the regulation and governance of rural areas as they lose their structured coherence and begin to exhibit marked signs of differentiation. Here, regulation theory (Lipietz, 1987, 1993; Jessop, 1995) has been especially instructive for rural geographers, and for those working more widely on restructuring within the linked fields of economic

Local government	Local governance
Bureaucratic	Flexible and responsive
Democratic	Post-democratic
Centralised	Decentralised
Collectivised	Privatised
Municipal	Entrepreneurial
Pursuit of social goals	Pursuit of market goals

Table 2.2 Characterising local government and local governance
Source: Imrie and Raco, (1999, 47)

and political geography. Goodwin and Painter (1996), drawing on the work of Lipietz, describe regulation as a set of processes that works to mitigate the contradictions that inevitably arise in all dynamic social systems. Such regulation is neither inevitable nor often intended and can thus be regarded as an emergent property of social systems - it arises from the interaction of separate elements. When the effective regulation of capital accumulation is evident, a 'mode of regulation' (MOR) is discernible. However, regulation is itself dynamic and prone to internal contradiction and will eventually be undermined and any such failure of regulation may lead to a crisis or a new regulatory mix[45].

Turning to the broad shift towards post-Fordism, and the associated changes within rural areas during this time, Goodwin and Painter argue that local government has undergone change in 4 key areas during this period of change. These are: centralisation of local finance; privatisation of public services; loss of local autonomy over remaining public services; and the expansion of non-elected sub-national agencies. However they question whether this constitutes a new coherent mode of regulation. The changes described are frequently theorised as a shift from local government to local *governance* (Imrie and Raco, 1999). This is an analytical concept that recognises that formal elected agencies are not alone in exerting influence over local affairs. A wide range of actors - non-elected state agencies, voluntary bodies, private sector interests, media and supra-national bodies - now exert considerable influence too. The broad distinctions between local government and governance are set out in Table 2.2.

Rural studies have paid particular attention to the role that the new affluent counterurban incomers may play in political process and decision-making (Halfacree, 1994; Woods, 1997). However, any studies of local governance, whether in an urban

or rural context, are of course problematised by their relation to wider state structures. Local Enterprise Councils, for instance, are heavily conditioned by centrally-set standards and performance expectations. Local initiatives are often instigated through centralised pressure, possibly without local legitimisation. Goodwin and Painter (1996, 637) suggest that the Thatcher government's desire to be seen to be 'doing something' about inner cities is an example of this. Equally, the 1995 rural White Papers place much emphasis on fragmentation and diversity. The multiplicity of agencies, charities and quangos that are singled out for attention is also emblematic of this same uneasy relationship between state structure and local agency.

Can the consumption countryside therefore be characterised as having a new mode of governance - in the sense of an historical rupture - any more than it can be suggested that an entirely new mode of accumulation has come into being? How distinct is the system of local governance that has developed since Fordism (simultaneously a labour process, a regime of accumulation, a mode of regulation and a mode of societalisation) fell into crisis after 1973? Hitherto local government had played a key role maintaining the Keynesian welfare state, local services and regulating local planning. Is the new local governance truly distinctive in comparison?

Goodwin and Painter (1996) argue that the social and political institutions of a MOR do not disappear overnight. Practices can persist long after they have contributed to sustained economic growth, and it is only now, 20 years later, that a sustained move away from the components of local governance under Fordism may be becoming evident. However, while it is now possible to catalogue certain changes in local practice - active citizenry, enterprise culture, 'flatter' hierarchies, performance-driven targets and the like - and label them as 'post-Fordist, it is unclear whether these changed structures and practices are helping to stabilise the functioning of a new MOR. Goodwin and Painter suggest that the right research questions are not being asked and that descriptions of institutional changes must be linked with empirical studies of actual economic stabilisation within each local area. Much as Marsden *et al.* (1993) have argued in relation to work on economic restructuring, 'top-down' theorising has not engaged adequately with local politico-economic structures.

Following Goodwin and Painter's argument further still, this is problematic because competition between places is a driving force of new arrangements. The rise

of competitive local governance is not merely a consequence of the failure of Fordism, but a causal factor in the dissolution of the possibility of continuing to pursue Fordist strategies. Places must compete for scarce centrally distributed resources (Jones and MacLeod, 1999), with the centre no longer willing to underwrite local expansion through 'growth packages'. This, in part, certainly explains the great interest in Internet-led tourism that will be explored in Chapter 8, where local actors are able to promote local tourism through their own efforts.

At first there appears to be a good fit between globalisation, flexible accumulation, post-Fordism and an associated drive towards local governance, but evidence that local governance is promoting local flexibility and competitiveness is, in itself, not enough to constitute a new MOR. Rather than a new MOR, a mosaic of differentiated spaces of regulation may be developing and there is 'little evidence so far that it [local governance] is capable of helping to sustain economic development or social cohesion in the medium term' (Goodwin and Painter, 1993, 646). Imrie and Raco (1999, 48-49) argue that there is, in fact, much continuity between 'old-style' local government and new local governance. Although new governance is supposedly characterised by a shift from local government as central player to 'strategic enabler' of the development and delivery of policy, in reality 'local government has always been a hybrid of public, voluntary and private forms of governance... in this sense it seems problematic to equate any epoch of local government with a particular policy trajectory'.

While institutional structures have become fragmented, this has not led to the demise of local government democracy but its reconstitution through spatially variable and complex forms. A growing awareness of the diversity of local experience and governance structures is now found throughout rural 'restructuring' literature. Cloke and Goodwin (1992) question the extent to which a new MOR understood as a 'hegemonic bloc', in the Gramscian sense, can be identified in the contemporary countryside. In particular they identify two impediments to such homogenised regulatory change:

1. A central feature of the consumption countryside is 'the appropriation of cultural values and images from a previous historic and hegemonic bloc to promote the very commodification of the countryside that is underpinning the formation of

new blocs' (*ibid.*, 325). On the surface, cultural values therefore appear to be withstanding change, denying any evidence of a 'sea-change'.

2. One consequence of more flexible national regimes of accumulation is the selective decentralisation of the remaining Fordist elements of production - industrial branch plants - into some rural areas (a process now replicated within the service sector and the shedding of 'back-room' telephone call centres to remoter rural areas). These changes are, however, highly localised and by no means ubiquitous.

They conclude that much of the regulationist literature, given its emphasis on national space-economies, is ill equipped to provide a satisfactory account of rural change.

> It will be more fruitful to understand change at a smaller scale where national and international trends of investment, regulation and social hegemony meet with societalisation and cultural coherence in specific places (*ibid.*, 334)

Marsden *et al.* (1993, 184) similarly highlight the 'singular lack of a coherent form of social regulation to match the new forms and direction of economic activity impinging on rural society'. Arguing that 'history delivers structures', they do however suggest that rural experience, with its complex assemblage of economic, social and political elements, is beginning to display some degree of coherence albeit in a differentiated form. They proceed to identify four 'ideal types' of rural experience.

First, there is the *preserved countryside*, often in evidence in the English lowlands and accessible upland areas, which is characterised by preservationist attitudes as expressed by mainly middle-class incomers. Any proposed reconstitution of rurality

- is highly contested here by articulate consumption interests who use the local political planning system to protect their positional goods. Second, the *contested countryside* consists of areas beyond the daily metropolitan commuting system. Here, farmers and development interests may still be politically dominant and capable of pushing through new proposals, in conflict with the interests of incomers who act so effectively in the preserved countryside. Third, there is the *paternalistic countryside*, where the power of large estates and farms is generally uncontested. In the face of falling incomes, such interests will actively seek and implement new diversification

opportunities with a view towards sustainable long-term management. Finally, there is the *clientilistic countryside*, in the most remote areas where farming, despite its pre-eminence, cannot survive without state support and close corporate relationships. Local politics will be dominated by concerns for employment and the welfare of the community (see also Murdoch and Marsden, 1994).

2.3.2 Rurality, representation and power

In tandem with the re-orientation of research towards examining the changing use and governance of rural space, a growing body of work is devoted to understanding how the *meaning* of rurality as a social construct is increasingly polysemic (Mormont, 1990; Halfacree, 1993; Cloke, Doel, Matless, Phillips and Thrift, 1994). The two are, essentially, inseparable. It is impossible to understand how the uses of space are negotiated, and outcomes determined, without comprehending the meaning that is invested in that space by the different agencies that are at work. As will be argued in later chapters, the material practices of ICT in rural areas are ontologically inseparable from the contested ruralities that are projected upon the same spaces by different actors.

Rural studies have recently begun to embrace ideas drawn from cultural studies and critical theory. Landscape studies, in which environmental myth and memory is articulated with political ideology, clearly resonate with wider interests for rural geographers in the uses of the countryside and rural space (Cosgrove and Daniels, 1988; Daniels, 1993; Short, 1993; Cloke, Milbourne and Thomas, 1996; Cosgrove, Roscoe and Rycroft, 1996; also see Wilson, 1992; Schama, 1995). Rural imagery, in the representative space of culture, is seen to connect with the 'concrete conditions of time and space' (Daniels, 1993, 245). This is an approach to environmental interpretation that has developed from literary theory's reaction to formalism and deconstruction and is now widely utilised within social science.

The ideas of Baudrillard, Derrida and Foucault in particular have diffused into the fields of cultural geography and environmental interpretation. In these varieties of deconstruction and post-structuralism any quest for an ultimate meaning of nature is deferred. Instead nature is deconstructed in ways which illustrate the role of capital in managing landscapes and the social shaping of hegemonic constructions of nature and rural landscapes (Bermingham, 1986; Zukin, 1991; Mitchell, 1994). Rural geographers have drawn on the work of Baudrillard in particular to describe a state of

'hyper-reality' in a discussion of the leisure practices situated in the open countryside (Ravenscroft, 1995).

Concomitantly, a concern with 'Otherness', a central research theme within cultural and social geography (Keith and Pile, 1993; Pile and Thrift, 1995) has begun to gain currency in rural studies (Kinsman, 1995; Agyeman and Spooner, 1997; Cloke and Little, 1997). This postmodern concern seeks to reveal or 'unmask' ethnocentric ways of seeing and doing, drawing in various degrees from the fields of psychoanalysis and postcolonial studies; such work seeks to illuminate the mechanisms by which identity formation - the positing of a stable, naturalised sense of self - depends upon the necessary construction of a politics of exclusivity, seeking terms of reference in external others which can be designated as strange or unfamiliar. The construction of the Other relates to concepts of difference which arose as the emergent bourgeois culture of the modern period sought to expel its anxieties, irrationalities and contradictions onto subordinate groups (Rutherford, 1990). It forms the basis for Freud's work on hysteria and serves as an explanatory device for long-standing ethnic chauvinism exhibited by white European culture (Said, 1978; Gilroy, 1987). The concept of Other is widely employed within a range of disciplines to examine aspects of culture associated with the tradition of post-Enlightenment thought and reasoning.

Cloke, Milbourne and Thomas (1997) identify three distinct but interconnected ways of studying the changing nature of 'difference' with reference to contemporary rural areas. Firstly, there is a new concern with understanding how the cultural construction of 'rurality' is connected with decision-making, particularly with respect to migration (Halfacree, 1997; Boyle and Halfacree, 1998). A second approach is concerned less with identifying a broad 'hegemonic' sense of rurality underpinning national perceptions of town and country and more with understanding how different lay discourses of rurality may intersect in particular locales and how conflict may arise (Mormont, 1990; Halfacree, 1993). Thirdly, rural geographers have themselves begun to address the extent to which, and the purposes for which, lay discourses of rurality might be incorporated into their own narratives of rural change.

In a recent exchange in the *Journal of Rural Studies*, Philo, Murdoch and Pratt have debated the extent to which rural studies have hitherto been complicit in the construction of an essentialist view of rural life in which a community of 'Mr Averages' - typically male, white, heterosexual and employed - implicitly constitutes

the imagined community for academic rural narratives (Philo, 1992, 1993; Murdoch and Pratt, 1993, 1994). This implicates rural studies in the continued cultural construction of the myth of the common rural culture, *gemeinschaft*, which serves to marginalise 'others' including the elderly, unemployed or dispossessed. Recent studies confirm the persistence of a substantial rural 'underclass', often invisible in communities which show outward signs of prosperity following rounds of counterurban migration (Cloke, Milbourne and Thomas, 1994).

Philo, who identified this 'blind spot' in rural studies deriving from its overwhelming focus upon the activities of powerful groups such as middle-class incomers, land-owners and planners, calls for this oversight to be rectified and redressed through attempts to incorporate a greater range of actors into academic discourse. He has suggested that rural geography should address the 'circumstances and the voices of "other" people in "other" places: a new geography determined to overcome the neglect of "others" which has characterised much geographical endeavour to date' (Philo, 1992, 194).

However, such a task is not unproblematic, on both methodological and theoretical grounds. Murdoch and Pratt (1997, 55) have questioned the value of merely 'giving voice' to others without any guarantee of actually uncovering the concrete mechanisms by which such exclusion is originally achieved. Acknowledging that the sub-discipline of rural geography is 'predominantly oriented towards the modernisation or rational organisation of the rural sphere', which inevitably favours narratives of the powerful, they remain wary of any project which might simply lead to the 'grafting-on' of others at the margins: 'what is required is more than *bricollage*; it is a reflexive restructuring of the academic terrain'.

Murdoch and Pratt (1997), drawing themselves upon STS, are wary of preformed categories and the purified dualisms that underlie much work on Othering. Much as Latour (1993) has harshly criticised the dogmatic tendency of postmodernism to uncritically reproduce such dualisms through ethnographic fetishism with 'hidden' voices, Murdoch and Pratt call for a more fundamental rethinking of 'how we do what we do', and not simply of whom is spoken to. Finding themselves broadly in agreement with one central tenet of postmodernism, they argue that researchers must accept that there is no one unique and privileged vantage point, no centre from which the rural can be 'captured and assessed' (Murdoch and Pratt, 1997, 54; see also Hartsock, 1990). However, they reject outright relativism, preferring instead to adopt

an STS approach, advocating a new theoretical topography. Rather than concentrating on inside-outside, they advocate the use of alternative spatial metaphors such as region, networks and fluidity (see also Massey, 1993b; Smith, 1992, 1993).

There are echoes of the same ontological rift here that appears in STS. While both parties are in broad agreement over the need to adopt a constructivist approach to rurality which acknowledges the variety of actors involved in its (re)constitution, the mapping of these processes - and the linguistic boundary work involved - is contested. However, the debate has raised awareness of the diversity of rural experience and - given the significance of the rural as a site of consumption – is closely related to broader questions of politics and rural governance. How, for instance, might contested ruralities be politically connective with rural land use and practices? In an examination of discourses of power and rurality in Somerset in the twentieth century, Woods (1997) describes the ways in which local elites have maintained their dominance by successfully mobilising their own partisan discourses of rurality, effectively drowning out other, oppositional, voices. Writing in a different context Murdock and Marsden (1994) have argued similarly for a new understanding of rurality as a site at which competing discourses intersect rather than as an easily-apprehended set of physical attributes.

The critique that Haraway has made of STS might usefully be applied here. 'Follow the actors' is a useful tenet but some actors are far easier to follow than others. Contested ruralities may not always come to light. Certainly, Woods' examination of the political environment of Somerset, while enlightening in many respects through its useful illumination of the ways in which discourses of rurality are used to legitimate the leadership position of political elites, actually tells us very little about other lay discourses, either their content or why they are ineffectual. Woods (1997, 456) stresses that for us to speak of rural politics 'in any meaningful sense at all, we must define "the rural" not in functional terms but as socially constructed by its participants through their experiences and expectations, and by more formal representations in public and private spaces'. At the same time he also acknowledges that large sections of the population - 'the rural working class and young women for instance' - are excluded from these local power structures.

Murdoch and Pratt's argument that the less powerful occupy a fluid, malleable rural space, comprising heterogeneous flows and complexities owes much to Homi Bhabba and Donna Haraway. This is the 'third' or 'hybrid' space of *ambiguity*.

However, following the critique of STS outlined above in section 2.4, it remains unclear just how much of a substantial contribution to academic knowledge is made by mere *acknowledgement* of the fact that neglected sections of rural society have an ambiguous relationship with dominant representations of rural space. The examples cited here neatly document such ambiguity yet are thin on examining how such ambiguity might be either empowering or debilitating. How might such insights be politically connective with, say, Marsden's (1999) concern with improving understanding of rural geographies of enablement and constraint?

It is not enough to simply document 'in-between spaces', interesting though the lived tensions of such places may be. Research is clearly open to accusations of 'research tourism' if it amounts to little more than the thoughtful documentation of unusual lives. Cloke and Little (1997) reiterate the need to consider how certain groups and individuals acquire their marginal status, and to recognise how such marginality can be dynamic and shifting. Drawing on Butler (1990) and Pile and Keith (1993), they recognise that accepting such hybridity of identity, in preference to modelling 'classic' political blocs in either a Weberian or Marxist sense, is a necessary prerequisite for understanding effective political action. They state that 'we remain desperately short of information on the lives and experiences of a whole range of neglected groups' (*ibid.*, 281).

Mindful of the dangers associated with such research practices, Cloke and Little (1997, 280) remain convinced of 'the value of in-depth local-scale research which attempts to uncover the beliefs, values and perceptions of rural people and, critically, how these contribute to how we know or make sense of the rural'. However, as Castells (1996, 1997b) has pointed out, there are many active opportunities for resistance provided by the flows of the network society. This study, while documenting and analysing the ambiguous 'beliefs, values and perceptions' of rural people, will also examine how these attitudes translate into action and the re-distribution of power.

2.4 Conclusion: methods, theories, ethics and action

Marsden (1999) has argued for a research agenda that asks how rural space is constructed by groups of local and non-local actors - a point he pursues in his own work in relation to networks of food - further arguing for the wider use of post-

structural approaches as an improved framework for research practices. It then follows to ask how local production and consumption spaces are linked regionally and internationally and to consider what types of social and knowledge-based networks help to sustain these linkages (Marsden, 1996, 251). This in turn invites consideration of what might constitute a 'powerful' or 'dependent' locality in relation to network formation.

The growing use of 'middle-level' analytical concepts in rural studies has been illustrated here, bridging the gap between top-down theory and local social action. The language that Marsden employs clearly ties the study of rural society and space to key social science theoretical constructs such as consumption and constructivism. There is also a renewed concern here with relations between structure and agency, and - a lasting effect of the cultural turn - an acknowledgement of the centrality of issues of representation and meaning to any attempt to model a holistic analysis of rural change.

To conclude, a handful of themes can be emphasised which link the literature reviewed here (summarised in Figure 2.1) to other aspects of the research process. These are set out in Table 2.3 and are outlined in greater detail here, as follows.

Firstly, the maxim of 'follow the actors' derived from ANT lends itself to a qualitative methodology, if detailed insights are to be gained into the motivations of actors. However, criticisms of ANT's tendency to 'miss' parts of the analysis

Linking theory with...	Research practices
...appropriate methods	'Follow the actors' Qualitative methodology Remain mindful of 'hidden' groups Triangulation of different methods
...other theories	'Field-test' middle-level concepts Establish inter-disciplinary connections Refine theory through field observation
...ethical practices	Avoid pitfalls of 'research tourism' Establish the location of power within networks
...and action	Critical examination of state policy Critical examination of commercial interests Remain mindful of policy implications

Table 2.3 Theoretical connections

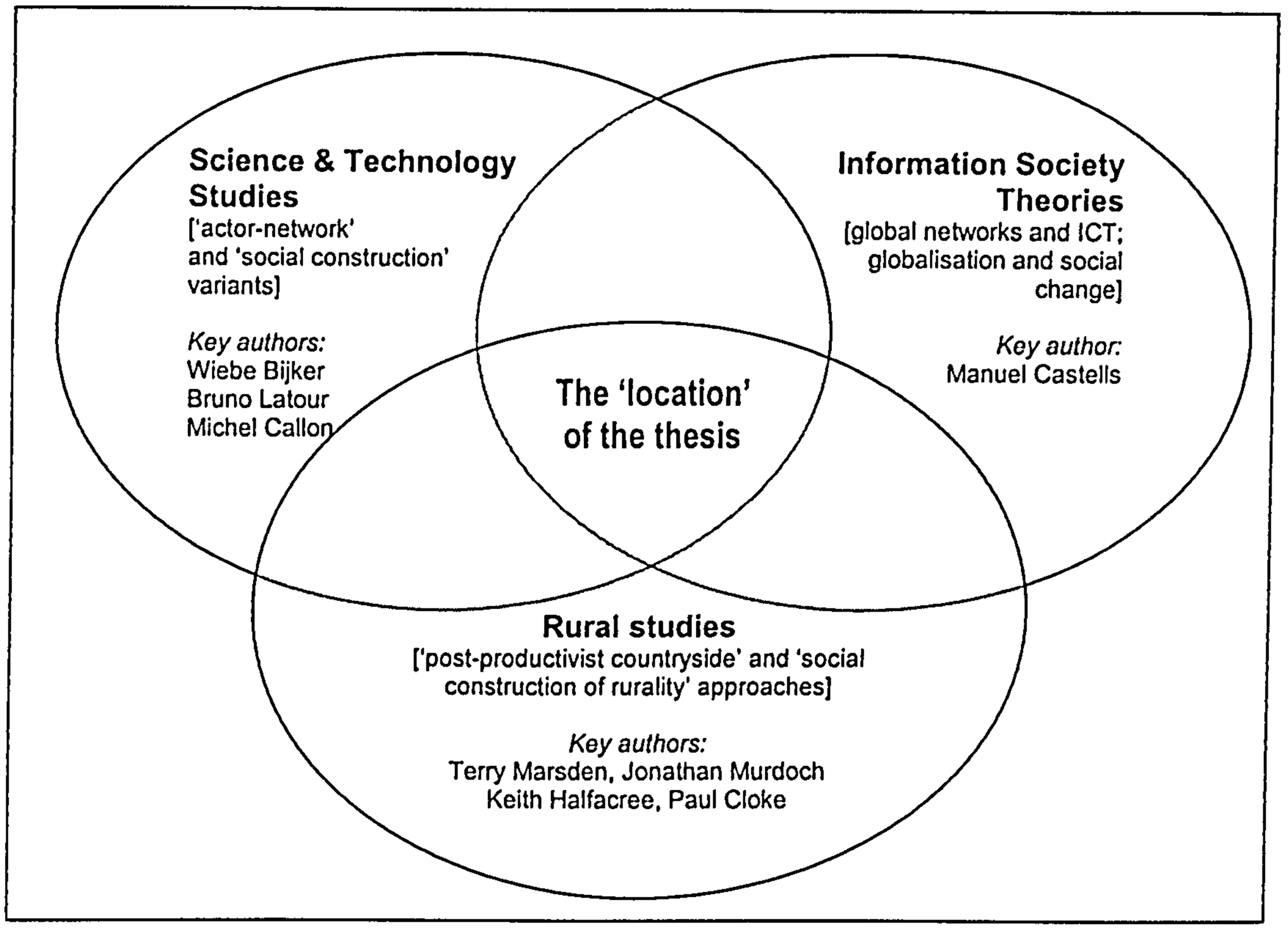


Figure 2.1 A theoretical synthesis

(Haraway, 1997) should make researchers mindful of neglecting 'hidden' voices. (Philo, 1992). In the absence of a sampling frame, as Chapter 3 will explain in greater detail, this study adopts a methodology which uses a multitude of 'entry-points' into rural communities in order to develop the widest possible coverage, ensuring that a wide range of personal interpretations and beliefs are encountered.

Secondly, this study has a strong theoretical emphasis and it is intended that it should contribute to the on-going debate(s) over the conceptualisation of rurality and locality. This has necessitated a lengthy introduction to the literature involved and a number of 'detours' for the purposes of clarification. In Chapter 9, following the analysis of a series of case studies, these themes are critically re-examined following their 'road-testing'. Thirdly, following Haraway (1997), I proceed with advance knowledge of the pitfalls of 'research tourism', questioning the gains that are made by simply documenting the fact that certain outcomes are arrived at in preference to others. If theories are to become linked with research ethics then issues of *power* must always be addressed. Fourthly, Marsden (1999) has commented on rural geography's need to move beyond simply mounting new 'critiques' of modernisation

and to develop a new legislative role for rural studies. While this study does not set out to make formal policy recommendations, later chapters adopt a critical stance towards the actions of policy makers and, where appropriate, highlight areas where improvement might realistically be sought in the future.

Notes

[1] Morley and Robins also treat post-Fordist and postmodern theory as separate entities in their account of 'reimagined communities' in *Spaces of Identity* (1995). However the theoretical categories referred to here - post-industrialism, post-Fordism and postmodernity - should in no way be imagined as being perfectly water-tight. As Kumar remarks, post-modernity smoothly subsumes post-Fordism as a component 'of its own ambitious conceptualisation of current developments' (*ibid.*,4).

[2] There is no shortage of books with this title, or a close cousin of it. Examples include *The information society: a retrospective view* (Dordick & Wang, 1993) and *The Information Society Revolution* (Forester, 1985).

[3] Post-industrial *theory* does, in fact, straddle the entire political spectrum - in addition to the less radical theorists like Barry Jones and Toffler there are numerous radicals such as Rudolf Bahro and Andre Gorz who are connected with Marxism and Green fundamentalism. It is the widespread commercial success of the more conservative of the post-industrial utopians, such as Toffler, that perhaps leads to the genre as a whole being perceived as being situated at centre-Right in political outlook.

[4] It ascribes to exactly the same teleological notions of progress and social enhancement that positivists such as Rostow (1960) and Zipf espoused. In this incarnation, the information revolution, following on the coat-tails of both the agricultural and industrial revolutions, ushers in new changes in the mode of production which in turn determine some degree of adaptation at the superstructural level, either for better or worse depending on the extent to which a Marxian framework is adhered to.

[5] These assertions were based on an interpretation of Labour survey and Census statistics which has not gone unchallenged (Cohen and Zysman, 1987; Castells, 1996).

[6] In language which is clearly indebted to *Star Trek*, that archetypal embodiment of utopian technocentrism, the dust jacket to *The Wired Society* (1978) invites us to share James Martin's vision of a 'bold new vision of the world to come'. We are invited on 'an exciting journey through a society whose very texture and fabric have been shaped by a revolution in telecommunications, a world where words such as telebanking, telemedicine and telehighways will be as common as telephone and television are today' (hardcover edition published by Prentice Hall Incorporated, New Jersey).

[7] The Club of Rome's *Limits to growth* model was published in 1973, the same year as Bell's *post-industrial society.* It may further be argued that post-industrial theory exhibited philosophical incompatibility with the emphasis on actor networks that figured in the structuration theory of Anthony Giddens that dominated social science during the 1980s.

[8] See, for example special issues of *Wired*, October 1997; *National Geographic*, January 1999; *New Statesman*, 27 April 99.

[9] In general terms this means the production, and consumption of more varied and customised goods, produced in short series (Brusco, 1985) and is typified by firms such as Bennetton who boast a ten-day delay between changed customer demand and the introduction of new lines. This is a significant departure from Fordism, the production line, jobs-for-life, highly centralised and vertically-integrated mode of production associated with early Twentieth Century capitalism.

[10] Fordism can be described as a regime of accumulation developed in the early Twentieth Century, orientated towards mass production for mass consumption in a rationalised, modernist and populist democratic society. Fordism became fully-fledged after 1945. Fordist assembly-line production, manned by a de-skilled work force, led to the genesis of an international formation of global mass markets all under the hegemonic umbrella of American financial and economic power backed by military domination, as witnessed in instances such as America's de-stabilisation of Allende's Chile. In 'Americanism and Fordism' (1931), Gramsci referred to new methods of work which are inseparable from a specific mode of living, thinking and feeling. In this sense it must be understood as an ideology, not merely a mode of production. Drawing on Gramsci, Stuart Hall similarly described 'Thatcherism' as an ideology which interpellates and not merely a return to laissez-faire capitalism (Hall, 1987).

[11] CAD functions can be grouped into four categories: design and geometric modelling, engineering analysis, kinematics and drafting. CAM has five main functions: tool design, machine control, process and material planning, robotics and factory management. These new systems allow flexible manufacturing systems (FMS) to flourish with the capacity to manufacture goods cheaply in small

volumes. This is the antithesis of Detroit-style 'hard' automation, as machines do not need to be completely rebuilt or replaced at times of product change, the design of which is easier/faster. One of the earlier success stories was General Electric who by as early as 1983 were using flexible automation to make 2000 different versions of their basic electric meter in New Hampshire (Bylinsky and Moore, 1985).

[12] Fordism generated its own system of internal contradictions by denying certain groups access to mass consumption through union-sanctioned pay differentiation between men and women, white and black, and on a greater scale, denying the Third World its benefits, delivering them very meagre gains in return for the destruction of local cultures, oppression and environmental degradation. Further, by the 1960s Western European and Japanese markets were saturated meaning that a drive for export markets was essential if further expansion was to be ensured. The obvious inability of Fordism and Keynesianism to contain inherent contradictions of capitalism at that point in its development was evident on several counts. The rigidity of long-term fixed capital investment wrongly presumed stable growth in home markets in Western Europe and the Americas. Once this error had been recognised any attempts to overcome rigidity in the workplace met with opposition from deeply-entrenched working-class power. Declining productivity in key sectors, allied with rigid state commitments to entitlement programs left printing money as the only solution to the economic problems of many Western states. Inflation was therefore inevitable, with financial institutions further burdened by the recycling problems associated with surplus OPEC oil dollars.

[13] Writers such as Stuart Hall, and other academics from the Birmingham Centre for Contemporary Cultural Studies, initially emerged from a critical Marxist standpoint. While re-negotiating the relations between base and super-structure, principally through Gramsci's concept of hegemony, their object of inquiry has been the new economic and social order emerging from a 'crisis' of capitalism and their findings have frequently been disheartening (Hall, 1987).

[14] Technology served the economic and organisational restructuring of capitalism in the 1980s but in turn was shaped by the neo-liberalism of that decade and the trend towards privatisation, for instance of BT, which fostered greater competition and innovation in the field of telecommunications. It can also be argued that the cultural turn of that decade, with further privatisation of leisure time and widespread disenchantment with failing inner urban areas providing greater incentives to work from suburban locations, encouraged the deployment of the technologies needed to serve such aspirations. Massey (1984) explained the clustering of hi-tech industries beyond the metropolitan boundary of London in similar terms.

[15] There has always been a strand of leftist thought which eulogises about pre-industrial social relations and which sees the un-picking of industrial capitalism as possibly symptomatic of a return to better times. The technology-driven move towards a global network economy, an integral element of post-Fordist organisation, becomes an opportunity as much as a threat by lifting politics and culture above the level of the nation state and offering new interconnections and interdependencies such as the Diaspora that Paul Gilroy terms the Black Atlantic (Gilroy, 1993).

[16] In the case of mobile telephones and VCRs the capability to manufacture has existed since the 1960s but mass production could not occur until greater micro-processing power and miniaturisation capability became widely available at low cost.

[17] Do developments since 1975 (the date of the creation of the Altair computer, often taken as a benchmark), genuinely constitute a 'revolution' which can underpin an information society paradigm? The computer actually has roots in War-time research and development such as the British Colossus (1943) and German Z-3 (1941) projects. ENIAC, the Electronic Numerical Integrator and Calculator, is generally regarded as the first modern computer. It was constructed by Mauchly and Eckert at the University of Pennsylvania, under US Army sponsorship. The transistor was invented by Bardeen, Brattain and Shockley at Bell Laboratories in new Jersey in 1947, with the junction transistor following in 1951. The shift to silicon was a accomplished by Texas instruments in Dallas in 1954 and the planar process, so vital to the production of chips, was invented in 1959 by Fairchild Semiconductors in Silicon Valley. The integrated circuit preceded this step forward by two years and its widespread availability after 1959 arguably inaugurated the information age. Mainframes diffused throughout industry in the 1960s, dominated by IBM's bulky 360/370. A further leap forward occurred in 1971 when Ted Hoff produced the first microprocessor for Intel. The computer-on-a-chip allowed information processing power to be installed in any environment from that point forward and the processing power of chips has since grown exponentially over 18 month time intervals. In 1975 Ed Roberts, a man with a small calculator company in Albuquerque, built a small-scale computer around a microprocessor named Altair. This was the basis for the Apple 1 and Apple

II microcomputers designed by high-school drop-outs Steve Wozniak and Steve Jobs in Menlo Park, Silicon Valley. IBM introduced the PC in 1981. The next important development was icon-based user-friendly interface technology, introduced to the Apple Macintosh in 1984 and to the PC by Microsoft. Microsoft was founded by Bill Gates and Paul Allen following their success in adapting BASIC for operating the Altair machine and the industry has effectively been led by software design ever since. Reviewing this long and continuous history of innovation it does seem unduly simplistic to argue that a 'revolution' took place in 1975.

[18] Many other authors have produced evidence to rebut the 'technological fix' theory. For instance, Edwards (1995) notes that:

1 The computer manufacturing sector has been the greatest single contributor to recent productivity gains in US commerce, not the application of the same technologies elsewhere.

2 Histories of computing often claim that increasing transactions and high turnover costs required 'computerisation'. However in 1955 only the bank of America was developing a check-processing computer system.

3 Between 1948 and 1983 American banks' output rose fourfold yet the greatest gains occurred in 1948-58, before computers were introduced.

4 Productivity only grew at 2% a year in the USA during the 1980s despite widespread computerisation.

Following Franke (1989), we can surmise that fundamental restructuring as a result of computerisation initially creates diseconomies and only in time can enterprises adjust to become productive.

[19] The case of the Internet is an especially interesting example of the convergence of several powerful forces and individual actors at a particular time-space. The Internet originated in a scheme initiated by the US Defence Department Advanced Research Projects Agency (DARPA) to prevent a complete Soviet take-over in the likelihood of war. The network architecture was designed to ensure decentralisation of communications control thus preventing a take-over by a hostile force. APRANET's system design made the network independent of command and control centres. Transmitting data in a horizontal, global network, the nature of the system makes attempts to control or censor it impossible. Much of the work was led by major institutions cutting across the Defence Department and the major research universities and corporations. For instance Bell laboratories created UNIX in 1969, the operating system that allows computers to access one another. Berkeley researchers adapted to UNIX the TCP/IP protocol in 1983 that allowed the encoding and decoding of high-speed data packages. Ultimately ARPANET, the network, became the foundation for the Internet and the World Wide Web. However in parallel to the Pentagon and other institutionalised research there existed a an emergent computer counterculture, the hackers, who were interested in the technology mainly for its own sake, or at least in ways which impinged on their own lives which were sympathetic with the libertarian/utopian counterculture of the 1960s. The modem was invented by two Chicago students, Ward Christensen and Randy Suess in 1978. The Xmodem protocol which allows computers to transfer files directly to one another via conventional telephone lines without going through a host system was the result of their determination to avoid travelling between their different locations in the cold Chicago Winter. And they diffused the technology at no cost. The technological features and social codes that developed from the original free use of the network have frequently framed its application (Castells, 1996). The origin of the net therefore reveals a confluence of military and big science investment with countercultutral innovation.

[20] More recently writers working within this vein have looked towards Ulrich Beck's theory of a 'risk' society, arguing that as a 'package deal' approach to economic change, the concept of flexibility has been over-stretched. Flexibility may be the language for the firm but for the workers, stripped of the 'jobs-for-life' security of unionised Fordism, risk and insecurity perhaps form a more suitable language (Allen and Henry, 1997).

[21] Genealogically, post-modernity can be read as a general social and political concept in contrast to the more narrowly defined postmodernism, a term more properly restricted to refer to eclectic and eccentric trends within the visual arts and architecture. Postmodern theory breaks down the dividing lines of both Marxian base and superstructure and functionalist 'sub-systems' by collapsing the different realms into each other. Indeed for Harvey (1989) post-modernity can be considered as a fully coherent mode of late capitalism while Jameson (1984) has famously called postmodernism 'the cultural logic of late capitalism'.

[22] The illusory does not imitate the real, rather it becomes it. Echoing Marshall McLuhan, Baudrillard argues that the medium now dominates the message (Rodaway, 1995) and explores the world of the decentred human subject, lost to the 'ecstasy of communication' (Baudrillard 1983). His focus becomes the disappearance of the subject, seduced by technologies and images in an object-centred

world. In other variants of post-Modernity, however, this route augurs in a new possibilities for the emancipation of subjugated groups and the forging of new, radical identities (Haraway, 1990; Spivak, 1990).

[23] Giddens (1990) has advanced the theory of time-space distanciation where formerly separate and self-contained systems come into contact with one another and become independent. However Harvey's theory of time-space compression more clearly links the *experience* of space-time to the expansion of capitalist relations of production on a global scale (Kirsch, 1995).

[24] In Spain, Madrid and the South followed at a much slower pace than the Catalonia whose natives were forced to innovate as they were prohibited to trade with the Spanish American colonies. Elite groups in the South were happy to live off their American rents for much of the nineteenth and twentieth Centuries. This is merely one example of many Castells cites as evidencing the historical and geographical peculiarities of the innovation and adoption of new technology.

[25] It is not within the remit of this paper to become unnecessarily immersed in genealogy and taxonomies. Suffice to say there are many ways of 'structuring' the material under review in this chapter. In reviews of STS, Hughes' systems approach is sometimes described as a third variant in its own right, alongside social constructivism and ANT (Bijker, 1995a; Mackay, 1995). The most important distinction, as outlined here, is the ontological distinction made between the rights of humans and non-humans to be constituted as actants. See also Martin and Richards (1995) on the classification of analyses of scientific controversies and Grint and Woolgar (1995) for a further review of STS.

[26] Bijker (1995a) notes technological determinism has become a term of abuse among scholars, suggesting that this might be ascribed to the important ideological role such determinism plays in public and political discussions about technology. 'There it results in a displacement of causation from human agency to machines, which is detrimental to attempts to create instruments for more democratic control of technology and society' (1995b, 238)

[27] Drawing upon the work of Shapin and Schaffer (1985), both Latour (1993) and Haraway (1997) have written extensively about the story of Boyles's vacuum experiments and Hobbes' vigorous refutation of Boyles' 'facts', characterised by Latour as the moment beyond which 'epistemology and political science will go their own ways' at the end of the 17th Century (Latour, 1993, 29). Examining the science, the cultural context and the eventual demarcation of the two, Latour highlights that moment of the Enlightenment when experiments were first allowed to produce their own matters of fact. Science, based upon practise, not ideas, aspires to universalism through the extension and stabilisation of its network. Here, too, are new actors - inert nonhuman actors such as the air-pump, endowed with meaning and incapable of bias - speaking to trustworthy witnesses. The transcendental origin of facts is witnessed in a multiplying number of private spaces - laboratories - by 'little groups of gentlemen who take testimony from natural forces and testify to each other that they are not betraying but translating the silent behaviour of objects' (*ibid.*,29). This contrasts with the old universalism of the premoderns, characterised by Hobbes, for whom there can be no division, no dialectic relationship between the production of knowledge of facts and politics, and where knowledge only has a place in support of the social order, usually buttressing religious doctrine. Henceforth we can see a division of labour between scientific spokespersons, empowered to 'translate their constituents who are mute from birth', and political spokespersons who are trusted to translate their citizens, 'who cannot all speak at once' (*ibid.*, 29). The scientific community appeals to the transcendence of a discovered nature, the political elites to the immanence of a carefully constructed free society, and a total separation must henceforth be maintained between the two. Yet contradictions already exist. Boyle is constructing nature artificially even as he claims he is merely discovering it. Hobbes' 'Leviathan' - his political body - cannot be immanent as long as it is becoming increasingly more dependent upon the world of natural things for technical support, rendering it transcendent and never purely of our own making. This approach to history is notable because it challenges our conceptions of local and global, demonstrating that 'global' networks of knowledge cannot be conceptualised apart from 'local' spaces such as Boyles' laboratory.

[28] By using the term actant , some actor-network theorists are able to further stress the primacy of semiotics to their work. The traditional social science connotations of the word actor are avoided (Bijker, 1995b, 251). Throughout this discussion I retain the simpler usage of actor.

[29] An example here might be to conceptualise the human genome sequence as a resource for the already privileged classes that may, hypothetically, one day be able to further improve the life-chances of their children by re-coding their DNA.

[30] Power can, of course, be modelled in many different ways. Obduracy and adaptability are two contrasting characteristics that come to mind. These ideas are explored in Chapter 9.

[31] For Althusser the 'subject' was a property of the *interaction* of these continents.

[32] A contemporary example of this is the drive to replace analogue television broadcasting with new digital transmissions on the grounds of superior reproductive quality and improved choice for the consumer. However the history of such media shows that technology offering superior standards of reproduction does not always dominate the market, as with the case of the Betamax videocassette which failed to displace the technically inferior VHS standard in the early 1980s.

[33] The French school's roots in semiotics are clearly discernible with this pronounced emphasis on the metaphors of language and translation. However, despite a sympathy with post-structuralism (certainly Latour has placed a great deal of distance between himself and concepts such as false consciousness), and a strong association with Foucault in particular, ANT may be criticised for still failing to *fully* acknowledge the polysemic nature of meaning and the politics of identity - fluid and chaotic substances (Keith and Pile, 1993). This stems in part from a reluctance to deal with pre-formed categories such as race or gender. The concept of difference, and consequent concerns with material distributions, in turn relate to notions of empowerment that are seen as an emergent property of networks in ANT. However critics of ANT question this logic, and the priorities of its proponents.

[34] Latour (1993, 46) insists that a notion such as textuality 'lives under the constitution' of the Moderns. He is therefore able to criticise the notion of textuality as 'a discourse consisting only in meanings effects detached from everything' and for introducing a third artificial 'category' to the existing couplet of nature and society, further encouraging the practises of separation instead of (re)unification. Woolgar, who elsewhere has allied himself closely with ANT (Woolgar, 1985) is mindful of the risk he is taking here, noting that 'the major part of the analysis focuses almost exclusively on animate objects as the originators of actions. For all the fine talk at the start about how we need to dissolve boundaries and deconstruct divisions between animate and inanimate entities, our detailed empirical examples hand sovereignty straight back to the animates (Woolgar, 1991, 90)

[35] In particular, Stuart Hall has highlighted the immense theoretical gains that have been made from acknowledging 'the crucial importance of language and the linguistic metaphor to any study of culture; the expansion of the notion of text and textuality, both as a source of meaning, and as that which escapes and postpones meaning; the recognition of the heterogeneity, of the multiplicity, of meanings, of the struggle to close arbitrarily the infinite semiosis beyond meaning; the acknowledgement of textuality and cultural power, of representation itself, as a site of power and regulation; of the symbolic as a source of identity (Hall, 1992, 283).

[36] Latour, however, is insistent upon the 'clean break' made by ANT and is in no hurry to become aligned with 'variants of postmodernism' arguing that 'the postmoderns who sensed crisis and attempted to overcome it can teach us some useful lessons - chiefly the pedagogies of constructivism and reflexivity - but irony, pastiche and critical deconstruction, which are ontologically anchored in an uncritical embrace of modernism's flight from the past, must be rejected. Postmodernism can be seen as 'a symptom, not a fresh solution. It lives under the Constitution but no longer believes in the guarantees of the Constitution' (Latour, 1993, 46). Latour uses the term 'constitution' here to refer to the unwritten, yet guiding, maxims of post-Enlightenement reason - chief of which is the assertion that nature and society be compartmentalised.

[37] In *Of bicycles, bakelites and bulbs* (1995a) Wiebe Bijker develops a theory of 'technological framing' to explain trajectories of technological change. By applying materialist semiotics Bijker shows how a technological artifact is broken down into a relatively finite number of different artifacts which have meaning for certain relevant social groups. These are groups that are relevant for the actors involved and are therefore also relevant for the analyst as he or she sets out to explain the development of technical change. In an account of the history of bicycle design Bijker suggests that the *Ordinary* (*Penny Farthing*) bicycle was broken down into two artifacts, the 'unsafe' and the 'macho', described by their relevant social groups in terms that describe 'working' for that group. These are socially constructed assessments rather than intrinsic properties of the artifact. The unsafe artifact was constructed by pedestrians who felt they were at risk from the *Ordinary* and a secondary relevant social group of women who encountered what was euphemistically termed 'the dress problem' when attempting to mount the high-wheel *Ordinary*. The macho artifact was associated with a cavalier group of young male users who terrorized Victorian pedestrians with their daredevil antics. The *Safety* bicycle, whose design remains with us today, is the contingent – and far from

inevitable - outcome of protracted negotiation between groups of ordinary users and technical designers over several decades. Further refining existing theories of the social construction of technology (SCOT) Bijker stresses the contingent features of trial-and-error analysis in the construction of an artifact, in preference to goal-orientated models of technological development.

[38] Bijker is clearly advocating an approach which is similar to structuration theory, where individual actors are subject to structure and in turn 'instantiate' it, but with some important differences. Giddens makes little reference to forms of collective agency such as organisations and networks, instead focusing on irreducibly active individual agency. Also, as Restivo (1995) argues, Giddens' structuration theory fails to clearly locate rules and cultural conceptions in time and space. The rules of science - rules of the structure - have emerged from the confluence of material, literary and social technologies and must, argues Restivo, be interrogated more closely than Giddens does.

[39] Spatial metaphors are extremely common in contemporary critical theory. Metaphor works by invoking one meaning system to clarify another; by choosing a 'source domain' which is well-used and understood it is hoped that more elusive concepts will be illuminated in the 'target' domain. Place, transgression, territory, border, boundary, movement, stasis, centre and margin all belong to an extensive Geographical vocabulary to which the writer can refer, making the unfamiliar familiar. As a new generation of social theorists have sought to engage themselves with issues of power and ideology, a new spatial language has developed to 'help comprehend the contours of social reality' (Smith and Katz, 1993, 67). Bourdieu developed his theory of the habitus as a series of fields, which he describes in terms which are essentially spatial, while grounding theory in metaphor was an admitted obsession for Foucault, whose work usually relied on a site such as the prison, or asylum as a material base. Foucault believed that a spatial vocabulary allowed him to express 'the relations that are possible between power and knowledge. Once knowledge can be analysed in terms of region, domain, implantation, displacement, transposition one is able to capture the process by which knowledge functions as a form of power and disseminates the effects of power' (Foucault, 1980, 69).

[40] STS scholars do dispute the importance of the laboratory. Cetina (1995) is interested in the symbolic and political construction of objects in fixed and highly localised locations such as the laboratory. However Latour has argued against the fixity of bounded locales arguing that it leads to a distinction between local and global practises which is in fact not sustainable - the macro-structure of society is made of the same stuff as the microstructure. However Cetina (1995) departs from Latour here, arguing that if construction is wrapped up in bounded locales, the ethnographer needs to penetrate such spaces and the stream of practices from which fact construction arises.

[41] In the famous painting of the air pump experiment the women observe the fate of the bird while the men focus upon the apparatus.

[42] Haraway notes, somewhat sardonically, that 'This is a strange analytical aberration, to say the least, in a community of scholars who play games of epistemological chicken trying to beat each other in the game of showing how all the entities of technoscience are constituted *in* the action of knowledge production, not *before* the action starts (Haraway, 1997, 28-29)

[43] Marsden *et al.* (1993) argue that rural studies were initially slow to engage with the wider world during early post-Fordist restructuring. Work on the changing nature of agrarian political economy was rarely connective with the gathering debate on flexible accumulation (Lash and Urry, 1987), spatial divisions of labour (Massey, 1984) and regulation theory (Lipietz, 1987) elsewhere within geography. Conversely, much of the 'top-down' theorising of restructuring work had little to say about the significance of rural space - possibly a great oversight given that, as Marsden *et a.* (1993, 2) note, it is relatively unencumbered by the relics of earlier Fordist labour processes and rounds of investment and thus often attractive to certain types of capital. If the 1970s were marked by a failure of rural geography to engage with mainstream theoretical modelling, then more recently the sub-discipline has forged much stronger theoretical links with contemporary social science.

[44] Marsden (1996) identifies three research agendas within rural geography which relate clearly to work found elsewhere within social science. These are *production-consumption relationships*, *social relations and social actions*, and *the social construction of institutions and power*. The key themes of rural change which are discussed here - the diversification of rural space, new modes of governance and the diversification of rural society and the *meaning* of rurality - are clearly subsumed under Marsden's three headings.

[45] Is 'successful' regulation with a stable MOR the norm, with brief crisis phases punctuating successive MORs? Or is a state of limited regulation or regulatory failure more pervasive? This is a recurring debate within regulation theory.

Chapter 3

Methods

Chapter outline

Firstly, this chapter describes how rural Strathclyde came to serve as the case study region for this study. As part of the Highlands and Islands of Scotland, it was one of the first rural regions in the UK to benefit from widespread and substantial upgrading of its telecoms during the late 1980s. The rationale for applying qualitative research methods such as depth interviews is then examined prior to a summation of the study's research process. The chapter explains how contact was made with a survey group and how interview data were collected and analysed in conjunction with material drawn from other sources. Finally, mention is made of the ethical issues that must be considered when conducting research of this nature.

3.1 Linking theory and method

This research project was designed to investigate the co-construction of socio-technical ensembles in rural Strathclyde. This was achieved primarily by investigating the working practices and social attitudes of a group of actors drawn from contrasting geographical locations, encompassing both representatives of state agencies and private citizens with a professional interest in ICT. The former assume a direct, or 'formal', role within local governance structures and are directly accountable to the population of Strathclyde with respect to their attempts to shape technical outcomes. The latter have a local influencing position by virtue of knowledge and skills but lack direct accountability. Their actions are therefore denoted as 'informal' throughout, to highlight this important difference.

This emphasis on informal activity follows recent concerns (see section 2.4) that lay voices and oppositional discourses have often been ignored by rural researchers (Cloke and Little, 1997; Woods, 1997). Given the opportunities that ICT presents for resistance (Castells, 1996; Warf and Grimes, 1997), actors with an initially low degree of inclusion in local power structures may, over time, re-negotiate their position as a result of the socio-technical interaction that occurs (see section 2.3). Later chapters demonstrate that this has occurred in several instances in rural Strathclyde and highlight the importance of developing an inclusive methodology for

the study of socio-technical ensembles which makes no *a priori* assumptions about the identity of lead actors. Power is an effect of network development and not merely a cause.

The local outcomes that are examined in this study are presented as the result of protracted negotiation between actors, who frequently have conflicting agendas. Such processes can only be examined through the medium of qualitative research given that there is a need to understand the motive forces that inform their actions. In-depth interviews were therefore conducted with formal and informal actors in the region over an 18-month period, following an investigative pilot survey conducted by telephone. Such qualitative techniques have long been established outside geography (Hall *et al.*, 1980; Morley, 1986) and are now widely used as a legitimate technique by researchers working, as in this study, with a 'nexus of discourse, meaning and power' (Pile, 1991, 459) which simply cannot be adequately mapped with a quantitative survey methodology.

The community of qualitative researchers has grown within human geography to the point where Bailey, White and Pain (1999, 183) suggest that qualitative research has 'gone from being viewed as a slightly esoteric poor relation, to being arguably the mainstream of human geography method' (see, for instance, Valentine, 1989; Pile, 1990; Burgess, 1990; Cloke *et al.*, 1996; May, 1996). This shift has been accompanied by a conscientious attempt on the part of many researchers to ensure that rigorous interviewing, analysis procedures and modes of reporting are adhered to. This is of vital importance if findings are to gain acceptance outside the local community of practitioners and to avoid what Baxter and Eyles (1997, 510) cynically refer to as the 'trust me, I agree with you' paradigm of peer group review amongst the interpretative community.

It should be noted that the primary emphasis on qualitative data in this study does not stem from a distrust of quantitative methods. Indeed, statistical data derived from other sources are used to support the arguments that are made here. However, quantitative techniques are ill-suited as the principal modus operandi for an exploration into the co-construction of society, technology and rurality given the *subjectivity* which is inherent to the vocabulary of needs, problems and solutions that inform such building work. Further links between the theory and methods used are set out in Table 3.1.

Theoretical assumption	Research practice
That the social construction of technical artefacts belongs within a wider discourse of local problems and solutions	A pilot survey, conducted by telephone, asked ICT users whether there were any social, political or physical obstacles to their work and questioned how such obstacles might be overcome. The themes which emerged from this phase of the research informed later depth interviewing practices
That a technology can be broken down into a series of social artefacts	Depth interviewing practices allow detailed insights into the lifeworlds of ICT users and the different social meanings which are attributed to ICT by its various users
That different user groups exist who share similar definitions of a 'working' technology	Thematic analysis of interview transcripts allows shared meanings to be identified between different agencies or highlights points of departure between different narratives and the ways in which ICT are socially constructed
That technical discourses are tied to wider discourses of power and rurality	Thematic analysis of data examines the ways in which contested constructions of rurality, as practised by the survey group, help to constitute the technological frame within which competing technological artefacts are placed

Table 3.1 Linking theory and methods
The theoretical assumptions which are asserted here are derived from Bijker, 1995a

3.2 Establishing a survey region in rural Scotland

The first task was to select a suitable rural survey region, mindful of the inherent difficulties in defining 'rural'. While there may be no universally agreed definition of 'rural', notions of physical remoteness and minimum density of population always figure in empirically derived measures. Most attempts make a useful contrast in rural 'types' such as the measure used in the Scottish Office publication *Scottish rural life* (1992) which distinguishes between those regions which are less, or more, than one hour's drive from a major service centre. Similarly, the measure normally used by the (former) Rural Development Commission, developed by Glen Bramley, makes a distinction between 'rural' and 'deep rural' areas. It was determined that such a contrast should be present *within* the survey region given the considerable hype which has been associated with the role of ICT in 'overcoming' physical remoteness.

As Cloke, Milbourne and Thomas (1994a) have noted, the activity of telework, which is explored in depth in Chapter 7, partially challenges notions of rural space which are founded principally upon the idea of remoteness from markets. However, the 'virtual' activity of telework is located in real physical space that imposes constraints on the teleworker in other ways. Workers require goods and services, such as healthcare and a suitable educational environment for their children, which cannot always be found in the most remote areas. This may influence migratory decision-making and may limit the extent of ICT usage in remoter areas where only a small proportion of established residents are likely to have adopted such technically-enhanced working practices. It was therefore determined that a contrast should be sought between decision-making processes and technical outcomes in deeper and less remote settings.

The decision was made to choose a band of rural land extending west from Glasgow in what was, until 1996, the administrative region of Strathclyde. More precisely, the survey is concerned with ICT users found in both island and mainland communities stretching westwards from Glasgow, encompassing two of the new administrative regions, Argyll and Bute and North Ayrshire. The three islands of Arran, Islay and Jura, and the mainland peninsula of Kintyre, constitute the exact survey region within Strathclyde (Figure 3.1) and all lie within the catchment area of Argyll and the Islands Enterprise (AIE). Kintyre and Arran are relatively accessible rural areas, if measured by the travel time to Glasgow and the motorway network that terminates there, whereas Islay and Jura are less so[1]. Levels of economic and demographic regeneration during the 1970s were extremely uneven in this region due to these varying degrees of remoteness. In total, approximately 20,000 people now inhabit an area of 24,000 square kilometres which lacks any major concentrations of population other than Campbeltown, in Southern Kintyre, with 5,600 inhabitants[2].

The spatially bounded nature of island and peninsular communities also lends itself well to the research process. Knowledge and understanding of local actor interaction is contributed to through the study of such clearly bounded localities. The keen sense of common identity often shared by islanders can be an important influence on technical development. However, these case studies should not be regarded as being unduly atypical. As Cox and Mair (1991) argue, despite the 'fuzziness' of boundaries, geographically defined social structures at the local scale, identifiable by locals themselves, are to be found in all kinds of settings. For instance, Allan and

Mooney (1998) have documented a well-defined sense of 'localness' in mainland rural areas of Argyll, albeit perhaps not as readily discernible as is the case with island communities. Yet it is precisely because islands possess this comparative advantage over unbounded mainland areas that the 'fragility' of local identity, as it interfaces with new globalising technologies, can be fully exposed. Although islands have clear edges, and there can be no 'boundary problem', their identities are still continually called into question, contested and fought over, as later chapters demonstrate.

An important reason for choosing to work in rural Strathclyde is the strong development agenda found throughout the Highlands and Islands of Scotland that is orientated towards redressing a history of marginality and relative deprivation. The Highlands and Islands have long been viewed as a 'problem region' by development agencies operating at regional, national and supra-national levels and early state-led 'roll-out' of ICT in the region in the 1980s aimed to address a range of social problems through technological innovation. Consequently, rural Strathclyde offers an excellent opportunity to observe located technological decision-making which involves a wide range of external interests, such as Highlands and Islands Enterprise (HIE) and BT, each working with their own 'problem-solving' agendas[3]. The next section critically reviews these Highlands-wide initiatives given that they are an important backdrop to recent developments in the survey region.

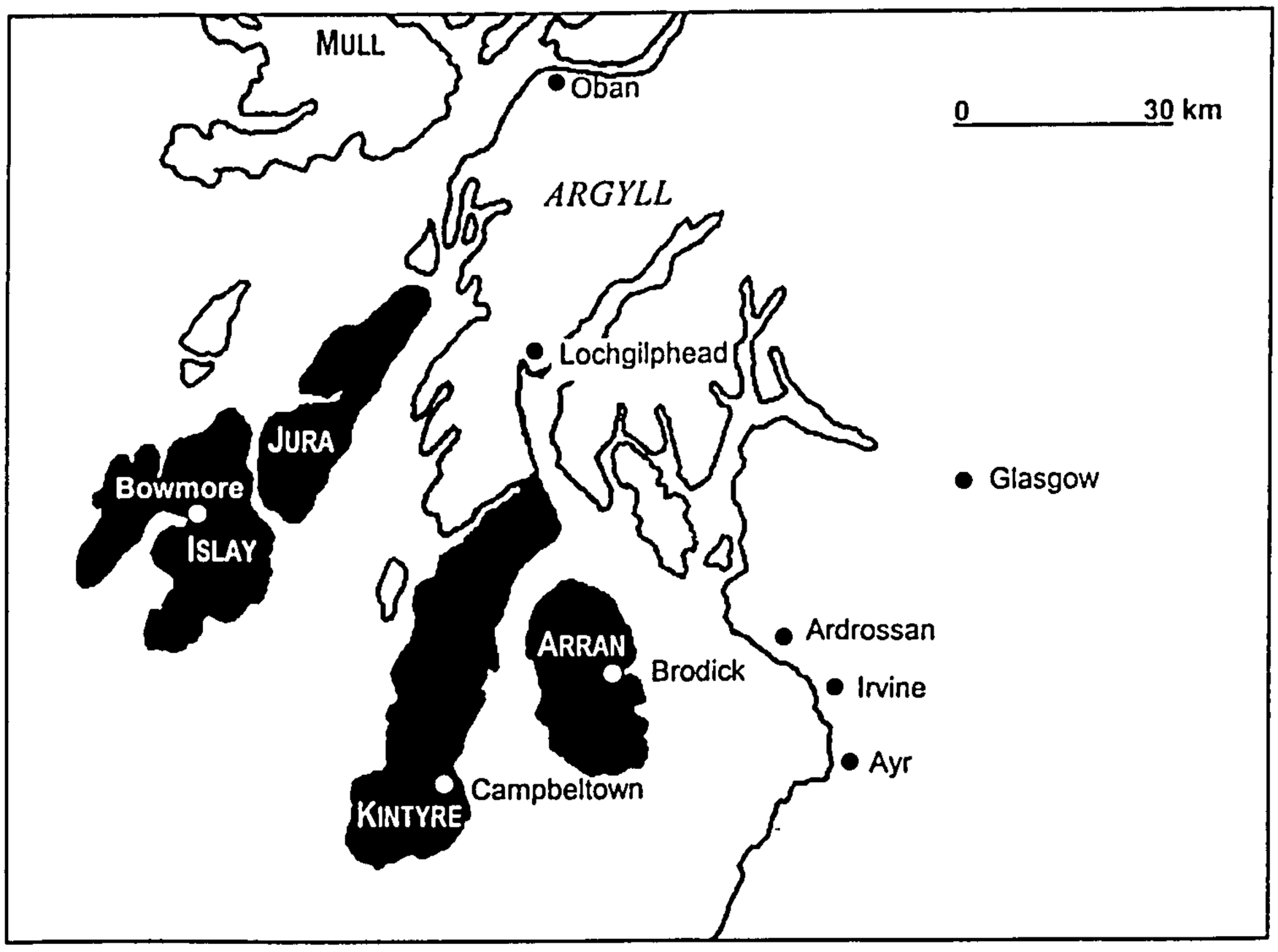


Figure 3.1 The survey region

3.3 Cyber-boosterism in the Highlands and Islands

> House to let on Iona with B & B potential. Other work available. Only families with young children need apply. Must be non-smokers. (Advert in the *Oban Times*, 1998)

As Gibbs and Tanner (1994, 1997) have noted, institutional discourse frequently tends towards the optimistic technological determinism of Bell's 'information society' thesis whenever ICT is placed on the agenda. It is certainly evident in comments made by the Highlands and Islands Development Board (HIDB) Chairman Sir Robert Cowan at the 1989 launch of The Telecommunications Initiative that 'information technology will unlock a huge field of commercial opportunities for the north of Scotland and render distance from markets irrelevant' (*Scotsman*, 1989). This is no less than the 'annihilation of space by time' discussed by Harvey (1989). Following a relative downturn in population and employment growth after the 1970s - for reasons that will be discussed below - ICT has figured prominently in the region's accumulation strategy in recent years. However, critics have suggested that the area has failed to exploit its early potential to become a leader in the field, querying both the avowed goals, and the means subsequently used to meet those goals, of private-public sector partnerships aiming to further the use of ICT in the Highlands and Islands (Gibbs and Tanner, 1994, 1997; Bibby, 1995; see also Bryden, Black and Rennie, 1993; Bryden, Sproull and Black, 1995).

That parts of the Highlands and Islands are marked by an extremely fragile demographic and economic environment is in no doubt. Following the tragic death of four young men in a boating accident in December 1998, the island of Iona, whose population has fallen by 40% since 1992, was left in a state of crisis. The four men that died in the accident - all aged between 19 and 24 - were the only unmarried young men on the island (Seenan, 1999). With only four children at the island school - all close to leaving age - and only one baby on the island, the future for the local school suddenly looked very bleak, bringing the marginal nature of the remoter rural areas into stark relief. Relatively buoyant aggregate statistics for the HIE region as a whole disguise marked inter-regional inequalities (Pacione, 1995).

For the most part, the Highlands appears to be successful at attracting migrants and inward investment, as Table 3.2 shows. Overall population growth in the region continues, albeit at a slower rate than from 1981-91, with a net movement of 4,539 people into the region between 1991 and 1998. However, much of the growth

LEC Area	Population (1998)	Net change 1991-98	Net civilian migration	Natural change	Other change*	% change 1991-98
Argyll and the Islands	69,015	-2,485	622	-1,119	-1,988	-3.5
Caithness and Sutherland	38,810	-1,070	-222	-448	-400	-2.7
Inverness and Nairn	75,940	2,850	2,011	939	-100	3.9
Lochaber	19,620	310	180	130	0	1.6
Moray, Badenoch, Strathspey	33,971	773	621	221	-69	2.3
Orkney	19,550	-10	79	-89	0	-0.1
Ross and Cromarty	50,640	1,540	1,096	444	0	3.1
Shetland	22,910	370	100	290	-20	1.6
Skye and Lochalsh	11,980	240	333	-93	0	2.0
Western Isles	27,940	-1,460	-281	-959	-220	-5.0
HIE Area	**370,376**	**1,058**	**4,539**	**- 684**	**- 2,797**	**0.3**

Table 3.2 Components of demographic change 1991-1998, HIE region
Source: GRO (S)
Note: * Includes change in the number of armed forces stationed in Scotland

continues to be focused around Inverness (3.9%) and Ross and Cromarty (3.1%). Other sub-regions show a much slower increase, while Caithness, Sutherland and the Western Isles have experienced a decline. Severe losses in Argyll (including Kintyre, Jura and Islay) are, it must be stressed, attributable to the loss of the Holy Loch US naval base in 1992 and the exodus of some two and a half thousand military personnel.

However, net figures can disguise the loss of local populations in certain areas within the individual LEC districts. North Uist, North Skye and North Sutherland are all areas which are rapidly losing their local populations - North Uist received £700,000 from the European Life Environment programme in 1999 to help create opportunities that will tempt young people to return (Cook, 1999). While most rural districts have experienced a net inflow of population during the 1990s, the presence of large towns in some of them may mean that this is more of an urban effect than one directly relating to rural areas (Scottish Office, 1995, 11). Aggregate statistics for the Highlands and Islands therefore often disguise the extent of the problems of underemployment and population decline in some of the remoter regions (Pacione, 1995). Following Marsden *et al.* (1993), the 'differentiation' of the countryside often occurs on a scale which is simply not discernible in the GRO figures presented in Table 3.2.

Unemployment is lower within the HIE region than for Scotland as a whole, although it is marked by a strong seasonal pattern, and in July 1999 total unemployment stood at 5%, compared with 4.3% in Scotland as a whole. However,

underemployment is common and, as one interviewee on Islay noted, 'everyone around here has at least three jobs'. The recalcitrance of certain sections of the community to accept state benefits may lead to an underestimation of the extent of deprivation in rural Scotland. Two thirds of heads of household, resident in four rural areas recently studied by Rural Forum and the Convention of Scottish Local Authorities, had incomes of less than £200 per week and uptake of state benefits was lower than expected given the level of incomes (Scottish Office, 1995).

Other economic indicators do suggest that the economy is relatively stable, despite employment losses in agriculture, energy and water. During 1998 there were 5.5 new business start-ups per 1,000 population in the HIE area, the rate for Scotland being only 4.4. The figure for the AIE region is slightly above the HIE average at 6.2. Two further points are worth considering here in relation to the nature of Highlands economy. Firstly, the structure of the HIE region is dominated by small businesses - almost 9 out of 10 businesses in the HIE area employ 10 or less people. Businesses in the HIE area with less than 100 employees account for 77% of total employment compared with 56% for Scotland as a whole (HIE, 2000).

Secondly, enterprise within the region, although healthy, remains heavily dependent on state subsidies drawn from a wide variety of sources. Much of the Highlands and Islands can be described as 'clientilistic' countryside. Industry cannot survive without state support and close corporatist relationships (McCleery *et al.*, 1987) and local politics are dominated by (indistinguishable) concerns for employment and the welfare of the community, as exhibited through continued rounds of funds-bidding. This is an activity which, while necessary, is often contentious in the communities surveyed in this study with the label 'grant-chaser' frequently employed as a term of derision.

3.3.1 Institutional reform: 'managing' the Highlands and Islands

The Highlands and Islands have a long history of state intervention[4]. When the HIDB was established by the Wilson government in 1965, at the height of the UK's brief flirtation with centralised planning, population had fallen by 30% from a peak of 424,000 in 1851 to only 302,000. The period immediately following the creation of the HIDB augured well for the Highlands. During the inter-census period 1971-1981 almost a century of population decline was reversed. Champion (1989) notes that the unprecedented growth rate in remoter rural Scotland during this decade was one of the

key indicators of the significance of the phenomenon of counterurbanisation for researchers working in the field at that time. The population of the Highlands and Islands grew by 18.2%, while Scotland as a whole decreased by 1.9%. The most rapid growth occurred in Easter Ross (32.5%) and Shetland (29.4%), benefiting directly from oil-related development[5].

However, the population turnaround extended beyond these areas. Even districts far from the oil fields such as Arran and the Cumbraes experienced a growth rate of 15.9%.There is no single explanation to account for the changes occurring in all of the affected regions in the 1970s. Some of the movement was people-led (Moseley, 1984), that is the principal aim of the migrants was to become country-dwellers (Jones *et al.,* 1986), be they retired pensioners or environmental idealists who were determined to establish some kind of foothold to livelihood in a rural setting - several latter such cases do, in fact, come to light in this study. Other movements are better described as job-led, with expanding rural employment opportunities attracting unemployed and dissatisfied workers from core areas, especially after the oil shock of 1973-4. Such movement was economically motivated rather than being directly attributable to personal taste or aesthetics[6].

Following the oil-related boom years economic prospects for the area weakened. In Shetland alone 3,000 temporary construction jobs were lost during 1981-85, and in July 1989 the government announced the creation of HIE to replace the HIDB and to run in tandem with Scottish Enterprise (SE). The central thrust of this initiative was directed at fostering greater links with the private sector through the establishment of local agencies. HIE and SE, with their respective networks composed of 10 and 12 LECs, began to function in April 1991. As the Scottish Development Agency noted at the time, 'to achieve success, Scottish Enterprise must draw in strong and committed private sector leadership and secure local community "ownership" of the economic development process', adding further that 'we must drive forward to a higher added value, increasingly knowledge-based economy' (SDA, 1989), demonstrating the region's early identification of ICT as an important resource.

The post-war political consensus to pursue equality of outcome - which had underpinned the subsidised hegemony of the productivist countryside - was replaced by a new discourse of enterprise, competition and market with the inauguration of HIE. The HIE Objective 1 programme for the region, that is funded to the sum of £260 million by the Government and the European Commission, sets out four

strategic priorities which summarise the continued problems facing the region which need to be overcome (HIE, 2000). These are:

- *Peripherality and marginality* - much of the region is isolated from core areas of economic activity and population.
- *Economic and social fragility* - there are restricted development opportunities and these are highly vulnerable to external factors.
- *Industrial structure* - the region is heavily reliant on a few low growth industries with agriculture and tourism both particularly vulnerable to externalities.
- *Environment and heritage* - the unique environment's economic potential must be maximised through tourism yet also safeguarded.

With policy discourse still clearly problematising Scottish rural life, MacLeod (1998, 209) argues that 'it could be quite tempting for the Scots now to envisage a "high road" to flexible accumulation beyond dependent Fordism'. Certainly, his suggestion is frequently evidenced in policy documents and remarks made by HIE officials to the media. A tendency to subscribe to the 'information society' thesis – wherein technology becomes 'the solution' – is allied with visions of a *high* road, with LEC officials repeatedly stressing the importance of high-skilled work over back-office functions (see, for instance, Hunter, 2000). How has this strategy been implemented and is there any evidence that this it is working?

3.3.2 Taking the high road with ICT

Recent changes in governance structures, and the move towards the establishment of Local Rural Partnerships, have ostensibly led to the promotion of a more sustainable, locally-orientated model of development with less dependency on centralised funding (DoE, 1995; Scottish Office, 1995). ICT places such claims in sharp relief. Indeed, the perceived potential of ICT to aid rural communities has made it a powerful catalyst for the actual formation of many state-business partnerships, making it an *agent* of change and not merely an object of debate, as Science and Technology Studies so clearly emphasise. The social shaping of technology and the technological shaping of society are different parts of a single process, namely the co-evolution of socio-technical ensembles (Bijker, 1995a).

Rural agencies throughout the UK are now attempting to bring ICT to their respective regions ahead of normal market processes to serve as a resource which can underpin local economic and social development, often demanding an unprecedented amount of inter-agency co-operation (*Northern Infomatics*, 1997). Early successes in the Nordic countries, especially Denmark and Sweden, triggered a wave of publicly funded initiatives throughout rural areas of the UK after the mid-1980s (Qvortrup, 1993). The decision was quickly taken to bring ISDN to the HIE region[7], with David Hunter, HIE's head of projects and research, asserting his determination that the Highlands and Islands would not, in this instance, be 'last as usual in the UK queue' (quoted in Bibby, 1995, 3). Large files cannot be easily handled without the superior bandwidth provided by ISDN lines that can transmit at high rates of 128 kilobits per second[8]. The provision of ISDN is still not universal in the UK and many rural areas do not have access to this service, limiting the type of remote working which can be accommodated in those areas.

From the outset the Highlands and Islands region has benefited from state partnership with BT which, despite deregulation of the telecommunications industry has, until recently, maintained a *de facto* monopoly in rural Scotland[9]. The Highlands and Islands Development Board and BT jointly agreed to collaborate on the Highlands and Islands Telecommunications Initiative (HITI) - with the installation of ISDN across 43 exchanges the centrepiece of the scheme. The public sector contribution made by HIDB was £4.9 million towards a total investment of £16.25 million with the balance met by BT, as well as an additional investment of £30 to £35 million towards the upgrading of the trunk networks. In total, almost £50 million was invested in the region's infrastructure (Bryden *et al.*, 1995)[10], granting 80 per cent of businesses in the area access to an ISDN line should it be required (*Teleworker*, 1997).

At the outset of the initiative, HIDB estimated a net job creation level of at least 500 over 10 years (excluding Inverness), representing a cost per job figure of £9,800 (Bryden *et al.*, 1995) which clearly constituted an acceptable amount. Bryden *et al.* estimated the net gain by 1995 at 654 full-time equivalent (FTE) jobs, with notable early successes including Lasair, a firm in Benbecula that provides 50 full time employees with proof-reading work[11], and Hoskyns, an information processing firm in Forres, Inverness[12]. However, such 'showpiece' initiatives - all frequently referenced within the IT media - are, in actuality, rather thin on the ground and the

majority of new work now appears to stem from the rapid migration of call centres into the region. HIE (2000) currently estimate that up to 1800 jobs have been provided by the 13 call-centres now established in the region. While call centre jobs are desperately needed in many areas, they do not constitute the kind of highly-skilled and highly-paid work that the Initiative sought primarily to encourage. HIE remain keen to encourage high-yield activities in addition to the procurement of back-office relocation. However, the nature of much telework makes it hard to gain concrete estimates of the frequency of its occurrence. Evidence of any such activity was actively sought as part of this investigation into the uses of ICT in Strathclyde.

Several Highlands-wide initiatives have also followed on from HIDB's early encouragement of ICT, thereby influencing the economy and society of rural Strathclyde. Project Ossian is an on-line tourism initiative recently launched by local area tourist boards throughout the Highlands region, mention of which is made in Chapter 8. The virtual University of the Highlands and Islands was launched in 1996 and offers remote learning courses to degree level throughout rural Scotland. Although offering purely educational services, it is interesting to note that over 30 funding partners[13] were involved in its conception. Another notable education project has involved the establishment of an Intranet link for the more remote primary schools in the Argyll region. Given that this development is unique to the Strathclyde region (of which Argyll is a part), it is examined in some detail in Chapter 6.

3.3.3 A field of dreams?

Despite evidence of new job creation and innovative project development, critics suggest that not all of the initial hopes of the Telecommunications Initiative have been met and that, in the meantime, the comparative advantage once held by the Highlands and Islands has begun to be lost. Most other areas of the UK have by now had their telecoms infrastructure upgraded, and the time when parts of northern Scotland were ahead of central London for ISDN facilities has long gone. Moreover, Bryden *et al.* (1995) found that only 2.6% of the businesses that they surveyed had actually taken advantage of ISDN. In another early appraisal, Gillespie and Richardson (quoted in Bibby, 1995, 4) suggest that uptake by the private sector in the region, particularly by indigenous SMEs, appears to be low and to consist mostly of back-office relocation. They argue that 'the image of the self-employed professional teleworker operating from his (usually his) home-office in a remote glen may be a seductive marketing

image, but it is unlikely to represent the reality for the majority of Highland teleworkers'.

The early roll-out of ISDN in the HIE region certainly does not appear to have fostered a major boost in either inward investment or the start-up of local businesses. While these were declared strategy aims, policies have not yet been set in place to boost demand, with the resulting danger of creating 'cathedrals in the desert' (Morgan, 1992, quoted in Gibbs and Tanner, 1997). It may then become even more difficult for local agencies to justify public expenditure in future large-scale upgrading of the network and, in an increasingly market-led environment, rural areas may find it harder to gain equality of telecoms service with urban cores in the way that was achieved in 1989. Bibby (1995, 4) suggests that increasingly the development of teleworking 'depends on political decisions related to telecoms provision, rather than on the technology itself'.

There is certainly evidence of an unproblematic assumption of technological determinism at the level of policy-making in HIDB's past and continuing into its contemporary incarnation of HIE. Bingham (1996, 637) argues that 'technological determinism remains, in its various forms, the most powerful (and popular) narrative of material-social change in current circulation'. Within the sphere of policy-making, technical discourse makes the unproblematic assumption that 'if you build it, they will come', to paraphrase the ghostly voice that haunts Kevin Costner in the film *Field of Dreams*, prompting him to turn his wheat fields into a baseball stadium. Consider, for instance, the following extract from the 1995 Scottish rural White Paper:

> The underlying principle is that modern information technology and telecommunications have removed the need for many contemporary office operations to be undertaken in conventional urban locations... this opens up an exciting range of options, from individual home-working, to directly managed local work centres, to remotely located facilities managed by contract suppliers of administrative services. (Scottish Office, 1995, 56)

It is a strong sales pitch. And yet this pivotal notion of 'opening up' – constituting the very processes of change that need to be grasped and more clearly understood – remains elusive, its subtleties lost to clamorous futurology. Following Castells (1996), this study is concerned with understanding more precisely *how* localities may attempt to enrol ICT into their attempts to access the flows of informationalism. The research methods that are now outlined are orientated in particular towards aiding

understanding of why local circuits of production, consumption and meaning come to be articulated in certain ways, and not others, with extra-local circuits.

3.4 Establishing a survey group

The first aim of this study (Table 1.1) is to document ICT-related activity in the region prior to analysing the means by which such outcomes have been negotiated in preference to other alternative models of development. From the outset it was determined that the group should include, given their acquiescence, representatives of state agencies who have the ability to implement policies for ICT in the region and who are directly accountable to local people, with respect to such shaping. The remainder would be drawn from the wider population of 'users'. These are individuals who rely upon ICT for the day-to-day conduct of their professional lives, whether in a self-employed or salaried position. The survey also encompasses the use of ICT in education, given the important role that this can play in stemming youthful out-migration from rural communities.

The study focuses collectively upon the activities and motivations of those individuals who can be described as 'lead' actors and who are, at times, collectively referred to as the area's 'digerati', a phrase borrowed from cyberculture which denotes technical 'know-how'. Such people are capable of enrolling others into new socio-technical networks, although not all actors will have access to the same level of resources at the outset of interaction to achieve this (Marsden *et al.*, 1993). Figure 3.2 maps some of the relationships within the region and attempts to differentiate actors according to their 'starting-positions'. While eschewing a strictly hierarchical attempt at modelling – business partnerships, especially those related to ICT, tend to be far more fluid and horizontal - some careful distinctions must be made. Some actors, acting in a gate-keeping or agenda-setting role for the state, have direct access to capital in the form of grants. Others must bid, in an approved manner, to these actors if they are to gain external support for their projects. However, the growth of funded NGOs, the actions of the Lotteries Commission and the free-falling price of computer hardware and software ensure that relationships between the local state and its citizens are not unidirectional.

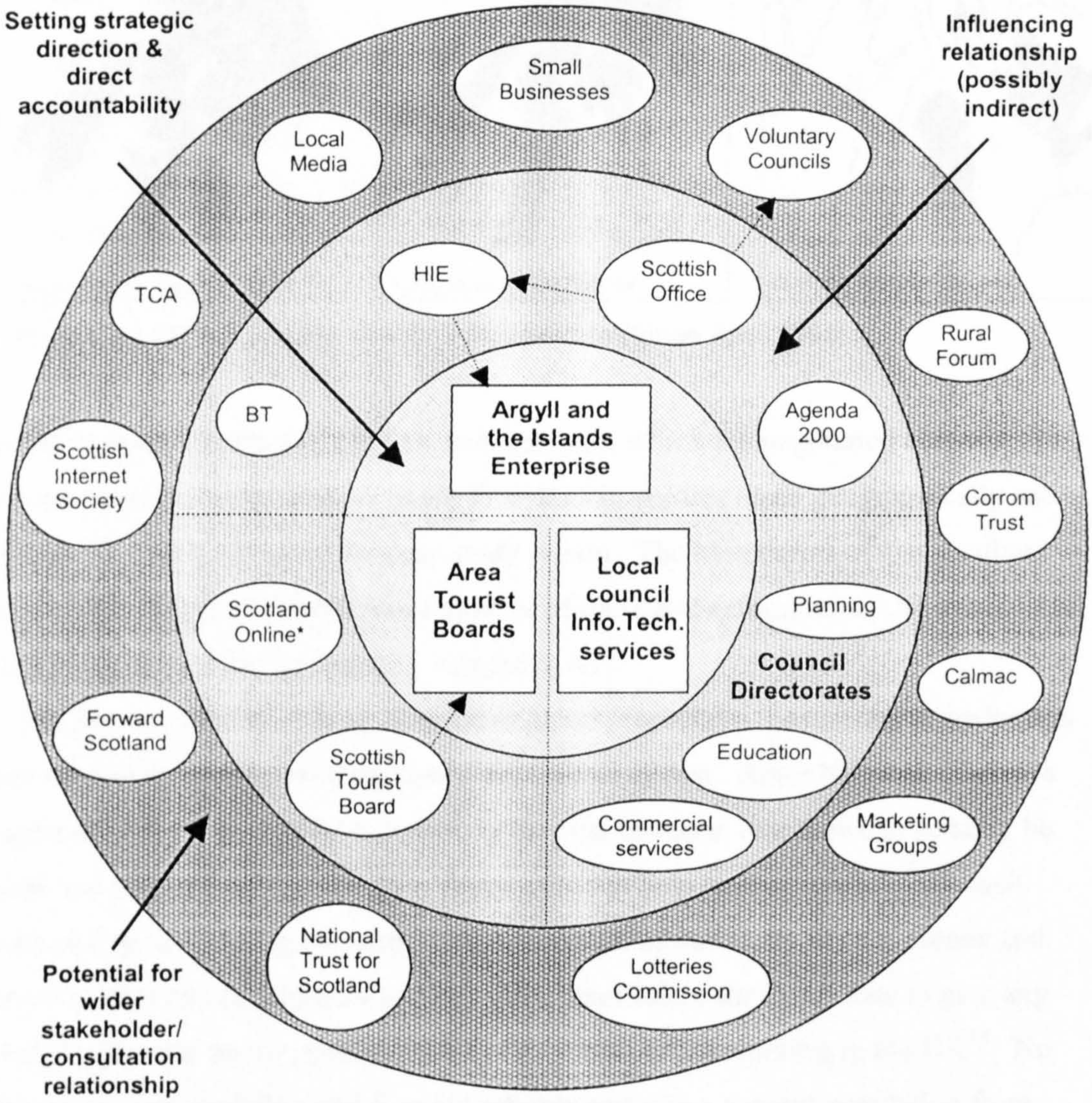


Figure 3.2 Actors and agency in rural Strathclyde

Note: * Scotland Online is not the only Internet company that works in tandem with the area tourist boards. This is a non-exhaustive schematic.

Currently, as in the past, development policies in the region have stemmed from many different agencies that have, for the most part, lacked contiguous geographical boundaries. Notably, the area as a whole shares a common Local Enterprise Company, Argyll and the Islands Enterprise (AIE), but comes under the auspices of two different local authorities. Following the disintegration of Strathclyde Regional Council in 1996, Arran is administered by North Ayrshire Council (NAC), a predominantly mainland urban authority, while Islay, Jura and Kintyre are part of the uniformly rural Argyll and Bute Council (ABC). Comparisons may therefore be

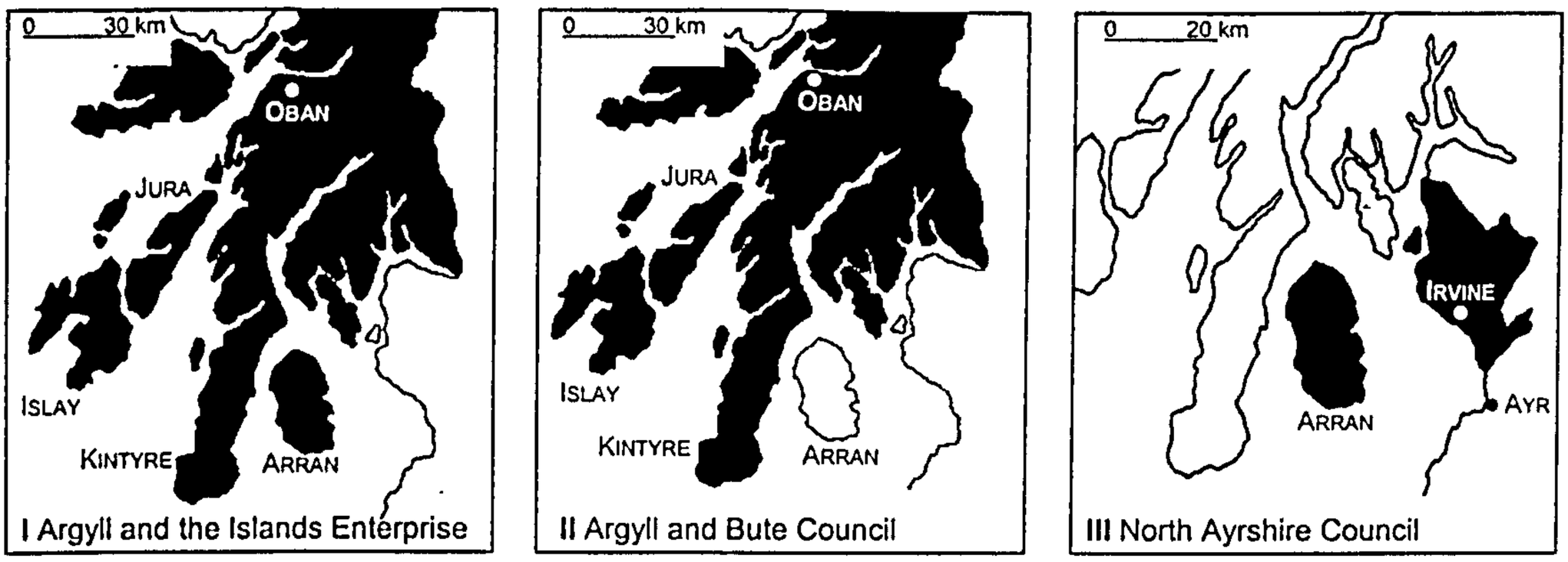


Figure 3.3 State agencies and their boundaries (Since April 1996)

sought between the kind of choices and outcomes which are negotiated between the different state agencies at work in the four distinct entities (both geographically and politically) which comprise the case study region. The boundaries of these authorities are shown in Figure 3.3 while brief profiles of these and certain other key agencies at work in the region can be found in Appendix A1.

The precise identity of many important actors, especially those in local businesses and community groups, was not easily discernible at first. Actor Network Theory's maxim of 'follow the actors' assumes, in the first instance, that they can actually be found and no pre-existing sampling frame exists to help researchers identify such 'informal' actors. Just prior to the commencement of this study, Huws, Honey and Morris (1996) had concluded that there were insufficient statistical data to give any reliable estimates on the present extent of any form of teleworking in the UK[14]. No data source was available which might reliably serve as a general population from which to draw a sample[15] and a survey group could only be assembled for depth interviewing purposes through the use of several different recruitment methods. The 'users' were drawn from two sources, firstly from a brief pilot project that was conducted by telephone in May 1997 and secondly from a series of letters to local newspapers placed shortly thereafter.

3.4.1 The pilot project

The telephone pilot survey comprehensively encompassed all of the geographically relevant ICT-related firms (listed principally under 'computer services' and 'internet services'[16]) included in the businesses section of the North Ayrshire and Argyll and Bute Phone Books and Yellow Pages. 12 individuals were contacted and asked

whether they foresaw a useful 'role' for ICT in their community. By this means, insights were gained into the ways in which the respondents themselves defined ICT. The telephone interviews also focused upon any 'problems' they might be facing, following the principle that 'disturbances' provide useful insights into the dynamics of social systems. These results were triangulated with a series of preliminary telephone interviews made to five representatives of state agencies operating within the region, comprising the local enterprise company, local councils and the area tourist boards.

All were asked to give their impression of the general extent of telework and ICT-related employment within their catchment area. They were also asked to name any individuals or initiatives which they considered to be of noteworthy importance in terms of success or failure and to also comment on the perceived relative incidence of professional ICT-work and lower-paid out-sourced work. This served the purpose of helping to clarify at an early stage the nature of some of the recurring themes and issues surrounding ICT. The interview prompts are given in Appendix A2. All were subsequently asked to participate in depth interviewing and all, bar one, accepted.

3.4.2 Local newspapers

Mindful of the need to ensure that no 'hidden' groups were neglected in the analysis (Cloke and Little, 1997), a community awareness-raising exercise was also conducted using local media[17]. Not all ICT users can be expected to provide their details in the local Yellow Pages. Some teleworkers, for instance, only connect with distant markets and do not advertise their services locally (this was indeed the case in two instances). A 'grass-roots' approach was therefore developed which invited comments from ICT users, which might indicate where their interests and concerns lay so that this could be taken into consideration while finalising the aims and objectives of the research. In this way the finished work should also, potentially, be of value to those who participate because they have co-determined the overall emphasis of the research.

Initially local newspapers were identified as the best avenue of approach given that they often serve as the principal forum for the co-ordination of local activities in small rural communities. Three newspapers cover the entire region and these are the *Arran Banner* (covering Arran), the *Ileach* (for Islay and Jura) and the *Campeltown Courier* (for Southern Kintyre). It is impossible to estimate what proportion of the local

How credible and dependable are the data?	Although mindful of the self-selection bias that can arise from a purposive newspaper recruitment strategy, the relatively small levels of ICT activity in the region make the serious skewing of the characteristics of the self-recruiting survey group unlikely. Conversations with AIE and LA representatives confirm that a very high proportion of the general population of IT users are likely to have been spoken to in the course of the study with all of the relevant organisations listed in the Yellow Pages agreeing to be interviewed.
How credible will the theory / hypothesis be?	Many of the cases examined were extremely 'information-rich' and covered a wide variety of experiences, necessary to the development of conceptual theory. Evidence of both 'successful' and 'failed' technologies has emerged. Several respondents have embarked upon ventures in order to rectify what they perceive to be shortcomings in the 'official' response to ICT in the region. Given the study's emphasis on interpretative flexibility and the contested use of the post-productive countryside, such cases are clearly of great relevance.
How transferable are the findings?	No claims are made that the empirical findings should be transferable to all other rural contexts beyond the study area for the simple reason that, as the study itself stresses, the politics of the rural are highly idiosyncratic and place-bound. The results hopefully provide a true and valid picture of the efforts made to shape ICT by institutional gatekeepers and mainly middle-class professionals in a remote rural environment. The transferability of my empirical findings are thus restricted and cannot be taken as indicative of trends occurring throughout *all* rural areas of the UK but may share some degree of commonality with other out-lying regions. In contrast, the theoretical advancement that is made may be significant for researchers working in other rural contexts and may thus be seen as fully transferable.

Table 3.3 Credibility and transferability
Source: headings adapted from Baxter and Eyles (1997), after Lincoln and Guba (1985)

population read them; however it is likely to be high. All of the papers are news-orientated (in contrast to those local journals that serve principally as an advertising medium for local firms) and serve as the principal source of information on local events for highly dispersed communities.

In all cases a letter was sent to the Editor which invited comments from any interested parties on the extent and nature of IT-related work within their region and details of issues and problems that were considered to be of importance (see Appendix A2). They were designed to be as open to individual interpretation as possible and the response to the letters was good. All replies came by e-mail on the actual date of publication, and in total some ten individuals, spanning a wide range of occupations and personal circumstances, responded, often in some detail. Of these, seven were invited to participate in depth interviewing and all accepted the offer[18].

As a self-selecting group there was obviously a risk of bias being introduced here. However, there was no way of making contact with non-listed individuals other than by direct invitation. At this stage there were still potentially any number of unknown

actors within the region. However, all interviewees were asked if they knew of any other ICT users and a few additional cases came to light in the 18 months that followed, three of whom agreed to be interviewed (these are designated as 'snowball' cases). Given the close-knit nature of these communities, it is unlikely that any highly influential actors remained unknown to me. A representative for AIE claimed knowledge of no more than 30 companies working 'vaguely' in the IT sector in the entire Argyll region, which would include several working further North in Oban and Lochgilphead and therefore beyond the bounds of the survey region. The pilot survey, in conjunction with the newspaper recruitment strategy, clearly encompassed a substantial majority of all professional ICT users in the region. Following Baxter and Eyles' guidelines for establishing rigour in qualitative work, I can therefore make strong claims for the credibility and transferability of the survey group, as set out in Table 3.3.

3.5 Depth interviewing: theory and practice

Of the 12 professional users who were approached directly, 8 eventually participated in depth interviewing in addition to 5 public sector representatives, 6 newspaper respondents and 3 snowball cases. 5 further individuals, who had initially agreed to be interviewed were, in the event, unavailable[19]. Between October 1997 and November 1998 the survey group were interviewed in their own homes or offices, with repeat visits arranged for those recently embarked upon more ambitious new Internet-related projects in order to monitor their progress. The interviews, which each lasted between one and two hours, were tape-recorded and then transcribed in full for thematically-informed analysis (see Appendix A3). All were drawn from Arran, Islay, Jura or Kintyre or, if located elsewhere, were directly accountable to the people in those areas with respect to their responsibility for ICT investment and development. All worked on a daily basis with ICT, either in an administrative capacity or in the course of professional duties. All were white and middle-class according to their current occupation[20], although not necessarily according to background. A summary of all the interviewees is given in Table 3.4.

The first three interviews conducted in October 1997 were regarded as part of the pilot study, serving to clarify themes which were subsequently built into the final re-drafting of the aims and objectives of the study (see Bailey *et al.*, 1999, for a full

Name	Location	Years* in residence	Position / occupation	Method of Contact**	Single / repeat visit
Setting strategic direction/direct accountability					
Elma	Irvine	30 (born in Ayrshire)	Head of IT services, North Ayrshire Council (NAC)	Direct by telephone	Single
Graham	Loch-gilphead	11 (from England)	Head of IT services, Argyll and Bute Council (ABC)	Direct by telephone	Single
Melody	Loch-gilphead	4 (from England)	IT Advisor, Argyll and the Islands Enterprise (AIE)	Direct by telephone	Single
John	Oban	40 (born in Ayrshire)	Education Resources Officer, Argyll and Bute Council (ABC)	Direct by telephone	Single
Charles	Ayr	50 (born in Arran)	Tourism Officer for Arran, Ayrshire and Arran Tourist Board (AATB)	Direct by telephone	Single
Influencing relationship					
Brian	Islay	15 (from Glasgow)	*Ileach* newspaper's on-line editor; teleworks as a freelance web designer	Letter in newspaper	Repeat
Dave	Islay	25 (from England)	ICT hardware and software engineer; teleworks as a language translator	Letter in newspaper	Repeat
Anne	Islay	17 (from Canada)	Leader of the Islay and Jura Council for Voluntary Service	Snowball	Single
Christine	Jura	40 (born in Jura)	Primary school teacher (on Islay); also uses ICT to publish newsletter for Jura	Letter in newspaper	Single
Martin	Jura	2 (from London)	Teleworks as a software designer	Letter in newspaper	Single
Donald	Jura	40 (born in Jura)	Uses email to assist bookings for hunting trips; genealogical researcher	Letter in newspaper	Single
Hugh	Arran	25 (from England)	Computer programmer (retired); proprietor of *arran.online*	Letter in newspaper	Repeat
Andrew	Arran	2 (from England)	Independent financial consultant, linked by ICT to UK databases	Direct by telephone	Repeat
Graham C	Arran	30 (born on Arran)	Graphic designer and printer, linked by ICT to printing works in England	Direct by telephone	Repeat
Bill	Arran	17 (from Fife)	ICT hardware & software provider; teleworks, writing software for clients in England; runs *arran.uk.com*	Direct by telephone	Repeat
Richard	Arran	31 (born in Arran)	Web page designer; distance learning project administrator (Project Orchil)	Snowball	Repeat
Mike	Arran	20 (from England)	Independent financial consultant, linked by ICT to UK-wide databases	Snowball	Single
Marion	Arran	3 (from Glasgow)	Isle of Arran Whisky product manager, remit includes e-commerce	Direct by telephone	Single
Roland	Kintyre	3 (from England)	ICT hardware & software provider; teleworks as a software designer	Direct by telephone	Single
Willie	Kintyre	40 (born in Kintyre)	Manager of KDP (data processing services)	Direct by telephone	Single
Rob	Kintyre	25 (from Midlands)	ICT hardware & software provider; tele-works providing PC support services	Direct by telephone	Single
Isla	Kintyre	25 (from Midlands)	Teleworks by providing training and support services	Direct by telephone	Single

Table 3.4 Survey details

Notes: * All migrants stated how long they had lived in the region. Members of the group that were born locally were not asked their age directly and, unless this information was volunteered, a best-guess estimate is given, to the nearest ten years.

** 'Snowball' indicates that the individual was recommended for inclusion to me by another member of the group. Correspondence was also maintained with some individuals by telephone and email who were not available for interview while I was working in their vicinity. Details of these additional cases, who are never quoted directly but whose experiences inform the overall analysis, occasionally add further 'weight' to the findings of the study in following chapters.

appraisal of such 'grounded' practices). In total, 29 interviews were conducted. From the outset it was intended that the findings of the in-depth interviews would be triangulated with other data derived from a variety of sources. These include:

- Secondary statistical data relating to socio-economic conditions in rural Strathclyde, at a variety of spatial scales of analysis.
- Policy documents relating to work and education.
- Project evaluation reports presented to industry.
- Web sites designed by members of the survey group which can be subjected to content analysis.
- Extracts from local newspapers and the national Scottish press (last searched February 2000).
- Miscellaneous on-line resources.

3.5.1 Applying qualitative methods in human geography

Many of the theoretical developments in geography outlined above in Chapter 2 have, in turn, raised a number of important questions relating to the appropriateness of the methods normally employed in order to gain access to the narratives of social actors. In each of the over-lapping fields of study concerned with post-modernity, time-space compression, cultural consumption and actor networks, important methodological issues arise. In particular, where theoretical constructs demand an in-depth understanding of the motivation and meanings attributed to actions and interpretations by social actors, the search for an appropriate epistemology is fraught with difficulties. In part these difficulties relate to the research process itself and the need to establish a set of practices which can yield qualitative, or interpretative,[21] evidence which will gain acceptance both within and (with more difficulty) outside the community of practitioners.

A second set of hurdles also exists which relates to the twin issues of *authority* and *ethics*. One consequence of the postmodern turn in social science has been greater awareness of the issue of the 'authorisation' on which studies of the 'other' (in any sense) rest - who lays claim to speak on behalf of whom, and on what grounds? Equally, researchers may ask what value their work may have to those who have, through their willing participation, contributed to its production. Recently this set of

concerns has become more closely intertwined with the broader issue of research ethics. These two sets of inter-related issues (research-process and authority-ethics) are now examined in more detail.

The research process

Particular attention was paid throughout to the efforts made by Baxter and Eyles (1997) to persuade the community of qualitative social geographers to enhance the 'rigour' of their work and to ensure 'meaningful inference'. Whilst stopping somewhere short of laying down a rigid set of rules of assessment for qualitative work, they frame a convincing argument for 'a general set of criteria' which should be met. Drawing on Lincoln and Guba (1985), they argue that the merit of qualitative research can be evaluated according to its *credibility*, *transferability*, *dependability* and *confirmability*.

Lincoln and Guba define the first of these, *credibility*, as the degree to which a description of human experience is such that those having the experience would recognise it and those outside the experience can understand it. Credibility refers to the connections made between the experiences of actors and the concepts utilised by the social scientist. By its nature the credibility of qualitative work is based on the assumption that there is no single external reality 'out there' but rather multiple mental constructs (ruralities and technical artefacts are highly relevant examples in the context of this study). This, more than anything else, distinguishes the notion of credibility as applied to qualitative work and the notion of internal validity which serves as the 'industry regulator' for quantitative structural survey work.

However, the reflexivity of the interpretative research process does not excuse its practitioners from adopting a credible methodology. Consequently, a great deal has been written about sampling procedures, interview practice and coding techniques for interpretative researchers and the appropriateness of different approaches (Bogdan and Taylor, 1984; Strauss, 1987; Eyles and Smith, 1988; Patton, 1990). The subjectivity inherent to qualitative studies, allied with the inevitable use of small sample sizes and further compounded by sampling frame problems arising in sub-cultural work, continues to limit the degree of external validation which qualitative work receives, a point stressed by Cloke *et al.* (1997, 228) in their appraisal of the Rural Lifestyles research programme (Cloke *et al.* 1994a):

> Our experience has been that qualitative text is regarded as too 'soft' and 'subjective' to be treated seriously by, say, government policy-makers whose discursive terrain in these matters has a topography of quantitative data within conventional and immutable policy areas.

Credibility can always be maximised through the minimisation of possible bias in selection and interpretation, and by working in a manner which is appropriate to the conceptual framework[22]. Purposive sampling is the most common approach adopted by interpretive researchers who need to collect data on information-rich cases given that only a small number are likely to be used overall. All possible efforts have been made here to avoid the inevitable skewing of experiences which can result from a too-hastily contrived snowball sample; every effort has been made to cast the net as wide as possible in order to 'follow the actors'.

The practices of interviewing are also important determinants of credibility. This is an area of concern that stretches far beyond the basic arguments attached to the degree of structuring which is employed / enforced by the researcher in the interview event. Researchers have become increasingly mindful of the power relations inherent to the interview and the presentation of the self (Pile, 1990). Age, gender, class and ethnicity all potentially determine how researcher and researched react to one another in an interview situation. Baxter and Eyles (1997) remind us in particular of Erickson's call for disciplined subjectivity amongst researchers - the practice of being mindful of one's own ethnocentricity. In some cases, respondents notably chose to identify with me as the researcher / outsider from London who, appreciating the schism that exists between 'here' and 'there', might lend a sympathetic ear to certain complaints:

> *Nobody here has any appreciation what the computer costs*, what the software costs. the difficulty is using the software and how much training you have to do to use it and its a fact of life its not just down to computers. *Brian* (emphasis added)

> *But we're not successful in London terms*, I mean they charge figures we'd be embarrassed to try and charge up here... I mean, Bob and I are both Year 2000 qualified consultants and according to the pundits you charge £250 to £500 a day for that work. I mean you can't charge anybody in Campbeltown that, *they'd laugh themselves sick, it's a different world*. So we do charge lower than normal for that sort of work here, but it's just a different world. *Roland* (emphasis added)

However, these are mild instances and at no time did the social relations between researcher and researched threaten the credibility of the analysis[23].

Turning now to the other criteria which Lincoln and Guba have employed as indicators of rigour, *transferability* refers to the degree to which findings fit within

contexts outside the study (Baxter and Eyles, 1997) and it is analogous to external validity. Few qualitative papers make great claims about the transferability of their findings which is unsurprising given that they are largely produced by a research community who have moved away from making efforts to uncover generalisable truths and are instead more frequently concerned with the production of micropolitics as realised in highly localised spaces. That is not to deny that the meanings that are shared by the sub-group under study may *not* be common to a larger group. However, the findings of localised studies do have much wider transferability when they emphasise the ways in which, for instance, a set of working practices may have had unintended consequences. For instance, Chapters 5 and 6 are devoted to the analysis of specific projects, namely Islay's Community Teleservice Centre and Argyll and Bute Council's attempts to introduce video-conferencing into their primary schools. The findings of these chapters do have direct relevance for communities in other locales who may be considering a similar course of action.

Chapter 7, in contrast, documents the experiences of a selection of mostly migrant teleworkers drawn from throughout rural Strathclyde. To what extent may generalisations be drawn from these findings? Given the small numbers encountered here it would be unwise to suppose that the experiences documented are indicative of any wider trend throughout rural areas of the UK. However, given the 'chaotic' nature of migration trends (Champion, 1992a) the depth survey conducted here may usefully further understanding of contemporary processes of change that are indeed transferable into other research environments.

Turning next to *dependability,* this refers to the degree to which it is possible to deal with design-induced change as the research progresses and to the rigour with which theoretical constructs are handled as the research process unfolds. The dependability of findings can be threatened either by poorly defined analytical constructs and premises or by premature closure. For instance, in reference to his own work, Pile (1990, 216) explains that 'I found it important to 'bracket off' the theory while doing the fieldwork in an attempt to allow unexpected issues to develop'[24]. In a similar vein, Cloke *at al.*'s (1994a, 1997) Rural Lifestyles project was an attempt to construct more qualitative and experiential narratives of the different needs and lifestyles of rural people.

> The texts constructed in this way not only encouraged the hearing of people's own voices, but also permitted an approach whereby the categories of interpretation could be structured under headings used by the research subjects themselves rather than conforming to 'obvious' policy-related headings
> (Cloke and Little, 1997, 10)

Similarly, I allowed many of the themes that I had determined the interviews should be structured around to be revised following my first visit to the region, having conducted the first series of interviews and realised that there were important issues to consider which I had not previously anticipated. Multiple researchers and peer debriefing all act as further safeguards here and, as Baxter and Eyles (1997, 516) note, the 'graduate student-professor supervisory relationship functions as a convenient, often implicit form of auditee-auditor research'.

This leads to the debate surrounding *confirmability*, the fourth criteria proposed by Lincoln and Guba (1985), and clearly related to the more familiar notion of objectivity. Suffice to say that the cultural turn in the social sciences has drawn attention more than ever to the weakness of the assumption that there is a single unchanging reality which may be documented in a clinical fashion by the disinterested observer. As such, most qualitative researchers will concede that the best that can be hoped for is that writers will admit to their own interests and biases, acknowledging that the interview is an artificial situation wherein the interviewer will inevitably have some effect on the outcome.

3.5.2 Authorisation and ethics

The ontological premises upon which postmodern and consumption-orientated approaches to cultural and social analyses are founded have called into question quite fundamental issues of academic authorisation and the production and ownership of knowledge. The interest in the historical and contextual, and the contingencies of culture and space, is inextricably linked with subjectivity and meaning (Cosgrove and Jackson, 1987; Pile, 1991). This has led to the increased adoption of qualitative, interpretative and ethnographic methods that have, in turn, raised all sorts of new issues focusing on the power relations between the researcher and the researched.

Post-colonial and feminist studies have drawn particular attention to the notion of 'othering' which inevitably impacts upon the business of doing ethnography. Any ethnographic study runs the risk of, at worst, becoming akin to a rather voyeuristic brand of cultural tourism (Bondi and Domosh, 1991). No matter what textual strategy

is employed the ethnographer must always claim power to represent the other and this is a problematic issue[25] (Hartsock, 1990; Spivak, 1990; Kauffman, 1993). Pile (1991, 464) consequently argues for a form of 'research alliance' to be forged between the participants in an interpretative study:

> There is an unspoken contract between the questioner (who usually agrees to tell an honest, though partial, account) and the questioned (who usually agrees to tell an honest, though partial, story). There may be no common grounds on which the participants agree to the research alliance, but they make this contract because they share a need to tell the story; though they might not agree what the story is or how it should be told.

The same ethical concern, focusing on this 'unspoken contract', also figures in Action Research approaches within the social sciences. Guba (1990) advocates a style of inquiry in which there is no fundamental distinction between the researcher and the researched. All are participants and have equal footing in determining what questions will be asked; in a sense they are all stakeholders. This is a route to knowledge that recognises at the ontological level that there are no generalisable 'truths' to be uncovered and that all problems are local. Certain of the rules of the scientific paradigm, namely objectivity and generalisability, have little meaning in human inquiry where there is no tangible reality and all that can be studied are mental constructions and mental interpretations. Inquirers produce a reality through interacting with the subjects of inquiry.

As Habermas (1971) has argued, the scientific method is a form of domination that is incompatible with humanistic pursuits. When research favours only the practitioners of research' whose actions consequently determine its fate, the real interests of the researched are ignored.[26].Guba (1990) argues that as a consequence ethics are inscribed as essential features of the inquiry as investigations must inevitably take the form of community based action, if all participants are recognised as stakeholders. Issues such as empowerment, democracy and social justice cannot be divorced from the production of knowledge (Hunt, 1993). However, as Sayer and Storper (1997) note, much writing in social science has adopted a critical viewpoint and yet given little attention to its normative implications, of how things ought to be different. The abandonment of the value-freedom position inevitably must propel the researcher into the realms of the political.

3.6 Conclusion

Rural geographers have recently begun to draw attention to a tendency within their own sub-discipline to regard rural populations as 'other' (see section 2.4). Observed by a largely urban-based white middle-class of professional geographers, rural people may, if care is not taken, become grist to the mill of academics who work with their own *a priori* constructions of rural lifestyles (Cloke and Little, 1997). In this section I have, albeit briefly, addressed this, and other concerns for practitioners of qualitative work within social science, particularly as they relate to my own work. Eschewing quantitative methods does not absolve the researcher from acting with rigour if findings are to be deemed credible. Equally, the ethical value of highly credible work can be called into question if it merely constitutes the voyeuristic appropriation of the words of others and serves only to improve the career prospects of the writer.

At each stage of the research process self-critical reflexivity was brought to bear upon the type of data collected, the methods used and the trust that was displayed towards me by the study's participants. For instance, during an interview, an individual may find themselves reflecting upon and justifying (both to the interviewer and to themselves) their own motivations. Such introspection may strengthen or challenge personally held beliefs in ways that may consequently help to dictate courses of future action. I must, therefore, acknowledge that my own presence may have contributed to the networks that are being built by becoming involved, in some small way, in the co-construction of society and technology in rural Strathclyde. As one of the participants, Rob, remarked to me, 'It's quite useful sometimes to stand back from what we're doing and have a look at us as seen by outsiders'.

In turn, my work has been informed by the people that I have worked with. Christine, the school-teacher from Jura, was frankly baffled when I asked her, rather clumsily in retrospect, whether the children's 'perception of space' had changed through use of the Internet. Initially I had determined that issues such as space-time compression and its effects upon local identity formation would figure prominently in my research, pursuing themes raised by Harvey (1989). It quickly became apparent that no one apart from me was particularly interested in such things. Issues surrounding the *promotion* of the local using ICT were at the forefront of most people's minds, rather than any imagined concerns on my part over the changing *meaning* of the local on account of heightened exposure to global flows of

information. Anticipating that further interviews were also likely to foreground issues of governance rather more than I had initially anticipated, I thoroughly reviewed my research aims and objectives at this stage. As a result, the overall emphasis of the finished thesis has shifted slightly, moving away from an initial schematic which had anticipated much stronger linkages with cultural studies and writing on postmodernity. The interests of the participants have, therefore, actively informed the theoretical emphasis of the finished work.

Notes

[1] Arran is 2 hours away from Glasgow city-centre (including a 45 minute ferry crossing) while Kintyre is 80 miles by road, typically a 2-3 hour journey. To reach Islay and Jura a 3 hour ferry crossing must be made from Kintyre, resulting in a total travel-time of up to six hours. Air flights from Glasgow to Islay only take an hour but this is an expensive from of travel which few islanders can afford to use regularly.

[2] The presence of very large towns can problematise rural research, leading to the documentation of 'urban' experiences in a rural setting. The Randall definition, employed by The Scottish Office in *Rural Scotland: people, prosperity and partnership* (1995), defines as rural those local authority districts that have a population density of less than 100 persons per square kilometre. Such districts account for 90% of Scottish land and are home to less than a third of the population. However most rural people live in much higher density settlements rather than isolated dwellings and there are great spatial variations in the size of such settlements. Density in the study area is approximately 1 person per square kilometre but distribution is, inevitably, uneven. Aside from Campbeltown, other notable settlements include Tarbert (Kintyre, population 1,300), Brodick (Arran, population 1,100), Lamlash (Arran, population 780), Port Ellen (Islay, population 1020) and Bowmore (Islay, population 969). The remaining 9,000 people in the region live in small villages (mostly with a population of 200 or less) and isolated dwellings.

[3] The choice of study is also intended to redress a bias within existing literatures towards the documentation of a relatively small number of UK ICT 'success stories'. The most noticeable, as described in the previous chapter, are located in the Hebrides, Inverness and the Shetland Islands. While such 'showpiece' ICT initiatives are widely written about it is much harder to gauge what kind of use is being made of ICT in the less well documented Highlands regions, even though they share access to the same high-quality infrastructure, with ISDN now being widely available.

[4] Between 1851 and 1961 the population fell by 30% as a result of out-migration, while the Scottish population as a whole grew by 70% as a result of natural increase (McCleery *et al.*, 1987). The 1897 Congested Districts Board (established in response to the triple jeopardy of the clearances, the collapse of the kelp industry and the widespread failure of potato crops) was the first of many centralised efforts to stimulate Highland economy.

[5] Oil related development along the East Coast certainly contributed to a narrowing of the gap between Highland unemployment rates and the national average - standing at 10.8% and 10.3% respectively in 1981. Several other large initiatives boosted employment, including the Dounreay nuclear facility, the pulp-and-paper mill at Fort William and the Invergordon aluminium smelter.

[6] McCleery *et al.* (1987) point out that the underlying mechanisms of change - the international political conditions favouring the exploitation of oil reserves and a cultural and economic climate conducive to widespread counterurbanisation - would have occurred irrespective of the formation of HIDB. The area's decline had arguably been arrested before the board's activities became a major factor. However the first decade of HIDB activity was generally deemed a success as it coincided with these structural changes.

[7] In 1985 HIDB, in conjunction with Oftel, first commissioned a study of their existing telecoms. The report stated that the existing copper wire analogue network, while perfectly adequate for handling voice traffic, was unsuitable for the transmission of data. The HIDB's subsequent submission to the Industry Department Scotland pointed out that upgrading was necessary not just to maximise the potential for growth but, crucially, to safeguard existing jobs 'as the market reacts to competitive conditions' (quoted by Bryden *et al.*, 1995, 22).

[8] In comparison the fastest conventional telephone modems are mostly limited to a top rate of 56 kilobits per second and this speed is rarely achieved in practice owing to noise on the line and high volumes of Net traffic.

[9] Scottish Telecom and Atlantic are recent start-ups who have begun to challenge BT's de facto monopoly. BT responded in June 1998 by re-branding itself as BT Scotland north of the border and announcing a £525m investment plan.

[10] HIDB justified their unusually large investment in a single project on two important grounds. Firstly, acting alone BT would only have upgraded four exchanges, including Inverness between 1989 and 1999, given their policy of targeting major customers with 30 exchange lines. In the event 70 exchanges were upgraded between 1989 and 1993. In addition, the infrastructure package included the provision of local call dial-up access to the packet switch stream service. Completed in

1990, this greatly reduced costs to businesses in the region using the international PSS network. Previously only users in Aberdeen, Glasgow and Edinburgh - all over 100 miles from Inverness - had access at the local rate of charging. A final strand in the initiative involved a company, Network Services Agency Ltd., being set up as a subsidiary of BT with the aim of stimulating use of the improved network by medium-sized companies of 20-100 employees.

[11] Lasair, Benbecula, is an information-processing firm employing 50 full-time employees which currently has a number of contracts including the provision of a specialist document key-wording and abstracting service for the Home Office Forensic Science Service, in London. Lasair also provides an indexing and abstracting service or Information Access Company (IAC) based in Foster City, California. The company has also been involved in the provision of a scanning, copy-editing, SGML formatting and proof-reading service, for the data capture of 100 years of Green's Scots Law Times. Recently, Lasair has been awarded a contract with Northton Heritage Trust, Western Isles, Scotland, for the production of genealogical CD-ROMs This production involves the scanning and data capture of 40 years of genealogical research data. It is also to receive work from Oxford University Press (Bibby, 1995; Bryden *et al.*, 1996; *Teleworker*, 1997).

[12] Hoskyns, the information technology group, has set up a business process-outsourcing centre. purpose-built industrial unit on the edge of Forres in north-east Scotland, 26 miles east of Inverness. Hoskyns' business at Forres is based on taking subcontracted work from other companies. Staff are provided with the details of parking fines in the London Borough of Ealing. Parking attendants issue the tickets with a hand-held computer and each night data is transferred to the Forres centre. Hoskyns opened their processing centre in April 1994, and expanded early in spring of 1995 to a neighbouring purpose-built unit, with a staff of 50. Hoskyns also handles enquiries from motorists, processes payments of fines and initiates the legal processes for anyone who fails to pay while the boroughs retain responsibility for parking policy and handling the court cases (Bibby, 1995; *Financial Times*, 1995).

[13] The UHI Project was given £33.35 million by the Millennium Commission in 1996, one of the biggest awards in Scotland, towards its estimated costs of nearly £95 million. Other funding partners include: the European Regional Development Fund under the Highlands & Islands Objective 1 Partnership Programme, the North & West Grampian 5B Single Programming Document and the Rural Stirling/Upland Tayside Objective 5B Single Programming Document, the Scottish Office, Highlands & Islands Enterprise, Highland Council, Shetland Islands Council, Orkney Islands Council, Western Isles Council, Moray Council, Perth & Kinross Council, Argyll & Bute Council, Highland Health Board, as well as the academic partners themselves. These include North Atlantic Fisheries College, Shetland College, Orkney College, Thurso College, Lews Castle College, Inverness College, Sabhal Mòr Ostaig, Moray College, Highland Theological College, Seafish Aquaculture, Argyll College, Dunstaffnage Marine Laboratory and Perth College. The campus is spread over the entire Highlands and islands region in these institutions.

[14] They also noted the lack of any publicly available information relating to the geographical distribution of ISDN nodes in the UK, which can serve as a pointer for higher levels of ICT-related activities Whether a phone point can receive ISDN depends on its proximity to a digital exchange, the critical distance being 3 km. Only when a line is tested by an engineer does it become apparent whether it is capable of receiving ISDN, and it is still impossible to gain comprehensive knowledge from secondary sources of who has access to this facility and how it is distributed.

[15] Although several telework organisations exist on the Internet, such groups were deemed unlikely to provide a list of members' names. Further, the very nature of such virtual communities often precludes any need for members to register physical contact details such as the region they live in. I did, in fact, make some preliminary forays into cyberspace but responses ranged from the indifferent to the hostile: a growing number of what are perceived to be 'intrusions' made by researchers into private discussion forums on the Internet has not been welcomed by many professional teleworkers.

[16] The entry under 'computer services' in the Yellow Pages also refers the reader to associated subject areas such as 'computer training services' or 'graphic design services'. All such secondary references were examined and the businesses listed were included in the survey if their work clearly involved ICT.

[17] My route to raising awareness within rural communities of Strathclyde was modelled on work conducted by Sir Walter Bodmin as part of the Human Genome project (Bodmer and McKie, 1994). While the aims of the Genome project itself have been heavily criticised in some quarters the methods used by Bodmer to gain willing participants for his research are well-suited to social

scientific ethnography. Bodmer enlisted the help of local media to raise community awareness in his research prior to his first visit to the Orkney Islands in search of blood donors. He successfully used local radio to speak about his work and to invite participation in the DNA mapping exercise.

[18] Not all of the responses were useful; intrigued school children and interested holiday-makers also replied.

[19] The vagaries of North Atlantic frontal systems have much to do with this. Suspended ferry services disrupted my timetable on several occasions, while individuals meant to be found on islands were in fact to be found stranded on the mainland when I called on them. The death of a very well respected elder member of Islay's community coincided with one of my visits, resulting in further turmoil.

[20] Middle-class is equated here with the Registrar General's categories of A, B and C1.

[21] Pile (1991) draws a distinction between 'qualitative' and 'interpretative' approaches, arguing that each has its own particular genealogy. The former, it may be argued, belongs to the quantitative-qualitative paradigm that traditionally embraces a distant and abstract research position. Interpretative work is marked by a shift towards a relationship in which both researcher and researched 'try to come to an understanding of what is taking place around them'. There is, therefore, an epistemological distinction to be made here between getting information and trying later to make sense of it (qualitative), and constructing a dynamic inter-subjective relationship (interpretative). While this is an interesting pedagogical point, I am content to use the two terms inter-changeably.

[22] Several useful analytical techniques exist which may be used *after* the data have been collected and they include peer debriefing and negative case analysis. The former involves inviting alternative interpretations of the data from peers while the latter consists of the inductive process of constantly reviewing the working hypothesis and revising it until it accounts for all known cases as presented in the interview texts. Both approaches carry an element of risk. Peer debriefing may cloud the judgement of the researcher especially if power relations become involved as in the case of the graduate student-supervisor relationship (Baxter and Eyles, 1997). Equally, negative case analysis can be too rigid an approach as certain cases may simply be too obscure to be sensibly included (Lincoln and Guba, 1985).

[23] Lincoln and Guba propose several 'preventative' measures that can be taken where credibility is threatened in this way. These are prolonged engagement, persistent observation, and triangulation of sources and/or investigators. For researchers acting alone, particularly at post-graduate level, the first and second of these measures are the most expedient. Terms such as 'rapport' and 'trust' figure prominently in most accounts of depth interviewing which involve repeat visits conducted over time-periods of a year or longer (May, 1994; Pile, 1990). Certainly, such rapport began to develop with the members of my group who were interviewed on more than one occasion.

[24] Employing depth hermeneutics by fusing the horizons of the researcher and participants, Pile engaged in 'ordinary language communication' with the farmers, building rapport over repeated visits. He explains that new issues arose from the conversations as a result of the lack of theoretical closure prior to the research being conducted. In this sense although the basic questions of the study did not change his reflexive involvement with the farmers allowed him continually offer new interpretations. Pile argues that in order to describe the lifeworld the researcher must have participated in the processes of production and reproduction of that lifeworld. Indeed, he argues for a relationship in which both interviewer and interviewed try to come to an understanding of what is taking place around them (Pile, 1991, 459)

[25] These issues have been particularly prominent in post-colonial and feminist discourse where many (predominantly white and middle-class) academic women have grown increasingly troubled by their apparent occupation of a subject-position which is phallocentric in the Lacanian sense – 'permission' is needed to write, and the cultural terrain exists as a place where others may not stand on account of their 'lack' (in this case lacking the authority to speak on behalf of others).

[26] John Beverley (1992) has advocated the use of the *testimonio* in post-colonial studies. This is 'a novella-length narrative in book or pamphlet form told in first person by a narrator. While acknowledging the imperfections of the form, Beverley remains enthusiastic, echoing the Leninist goal of a positive union between the 'voiceless' oppressed and radicalised intelligentsia: 'an appropriate ethical and political response, more the possibility of solidarity than of charity' (Beverley, 1992, 109). If this is not a genuine example of the sub-altern gaining permission to speak, it is at least a triangulation of cultural forms of humanist literature and sub-altern practices.

Chapter 4

ICT in rural Strathclyde: a story of local sensitivity

Chapter outline

This chapter documents the nature and extent of the use of ICT in rural parts of southwest Strathclyde and highlights the diversity of responses to be found within a relatively small geographical area. Local sensitivity to 'globalising' technologies is examined within the wider political and social economy of rural space. The region's response to ICT is shown to be fragmented both spatially and socially while the uses of technology are shown to be contested. The chapter concludes that a reflexive relationship is evident as ICT, in turn, is seen to be providing an important arena for the *practice* of local politics and new forms of rural governance.

4.1 Local contexts, 'global' technologies

Recent rural studies have highlighted the increasingly diverse range of possible local responses for the 'post-productive' or 'consumption' countryside (see section 2.3). This chapter looks for evidence of such local sensitivity to change in rural Strathclyde, contrasting the nature and extent of ICT usage in Arran, Islay, Jura and Kintyre. An overview is therefore provided of the region as a whole prior to the detailed examination of selected 'micro-studies' in chapters 5 to 8. Comparisons are drawn between the four locales based upon the following themes:

- The trajectory of technical development followed since the late 1970s.
- The degree of involvement by those formal agencies capable of financially assisting with the diffusion of ICT into local employment structures and services.
- The degree to which such activity is orientated towards buttressing existing sectoral interests or developing new opportunities.
- The extent to which leading local actors appear to be motivated by community and social concerns.

4.1.1 The island of Arran

There is limited evidence of new 'vertical' usage of ICT on the island. The only firms that are thoroughly dependent upon the use and servicing of information-based products include a graphic design company, two computer hardware providers and a slight handful of teleworking professionals working from 'virtual' offices. Four were interviewed, two of whom design software and two of whom work as financial consultants. Anecdotal evidence suggests that there are also two further teleworkers on the island, specialising in Japanese translations and aerospace consultancy respectively[1]. Additional ICT activity on Arran is tourism-orientated, with two recently designed web sites promoting the island's attractions and products (*http://www.arran-online* and *http://www.arran.uk.com.*). Their content is examined in detail in Chapter 8. Arran's three largest firms - Isle of Arran Distillers, Arran Aromatics and Paterson-Arran - all have their own web sites for promotional purposes, as do several of the larger hotels.

Given the island's proximity to Glasgow and its relatively large population size (in comparison with many other Western isles), evidence of ICT usage is surprisingly low with all recorded activities commencing post-1995. In part this is indicative of Arran residents having received very little encouragement from state agencies in the region, reflecting the unusual political structures that encompass the island. Argyll and the Islands Enterprise (AIE) has had limited involvement with the ICT enterprises now underway on the island. This lack of engagement relates to the presence of the highly affluent, and often retired, cohorts that are to be found on Arran given that the island is relatively accessible. Arran is not a priority area for AIE, according to Melody, the ICT advisor for AIE, because it is 'relatively prosperous in Argyll terms'. This lack of interest is also reflected in other ways. In 1999 none of Arran's ICT businesses was listed in AIE's on-line skills register[2]. This is symptomatic, Arran's digerati believe, of their low priority status.

North Ayrshire Council (NAC) is the other statutory body with the power and resources to set a strategic plan for the island. However, Arran is once again in an unusual position here, appended to a predominantly urban mainland authority of 113,000 people. Long-term unemployment in the old Clydeside towns of Irvine, Saltcoats, Stevenson and Ardrossan is of greater concern to NAC than the seasonal unemployment found amongst Arran's low-income groups. Further, a high proportion of the island's incomers has reached retirement age and has little need for

new employment opportunities in any case. As such, NAC has made very few interventions into the island's affairs that have any bearing on the deployment of ICT.

Support has been limited to the provision of infrastructure with little attempt to encourage its actual use. Arran actually received ISDN well after HIDB's 1989 roll-out to the remoter islands (see section 3.1.3), once again pointing to its low priority status. In 1996, following the merger of Scottish regional and district councils, Elma, the Head of IT services at NAC, finally oversaw the installation of ISDN to parts of Arran; a PC with video-conferencing capabilities was installed at the council offices in Brodick shortly thereafter. Elma admits that, although this was an effort to 'try and get some sort of commitment to our citizens on the island', it was also entirely fortuitous.

> I was looking at replacing the telephone systems in some of the main council systems prior to local government reorganisation ... and in doing that I was having discussions with my colleagues who happened to mention about putting ISDN into Arran, and that they were starting to look at doing it... So I had a look at it and said 'well, can we actually make this happen, can we just do it?' And they said 'yeah', because from their point of view it was something they were going to do at some point. *Elma* (NAC)

Elma is unaware of what, if any, use is made of ISDN and the video-conferencing facilities on the island and admits that communication has 'broken down a wee bit somewhere for some reason'. She has, in fact, been entirely pre-occupied with internal council affairs following the re-organisation of local government in 1996. Elma inherited a proportion of her staff from Strathclyde Regional Council in addition to the entire labour force that had previously worked in the IT department in Cunninghame District Council. Her first task was to shape this body into a functional unit and her office has subsequently had to concentrate all of its efforts on re-engineering internal computer systems for the new authority. Year 2000 compliance was an issue which also prevented any real extension of policy during 1998 and 1999, with staff consolidating and refining existing programmes to ensure that the transfer to the year 2000 on computer clocks went smoothly.

> I mean to be honest from an IT perspective the bulk of our work is core council systems, general financials, council tax, rents all that kind of stuff... that's the big part of our work. We are starting to do a wee bit *just now* on developing links with the rural communities... The council's resources with IT have all been concentrated on consolidating systems. *Elma* (NAC)

The Arran residents are quite aware of their weak local governance structure and are sometimes critical of local state agencies for not doing more to help. Richard, a

teleworker who also helps manage a distance learning initiative called Project Orchil[3], notes that:

> NAC... they seemed to be looking to other bodies in partnerships. This was the buzzword that the council discovered last year, working with private enterprise in *partnerships*. But they couldn't offer anything back. They offered us in-kind support but what the hell does that mean? It wasn't tangible or it wasn't anything we could really use, you know, the best use that we've had from them is letters of support. *Richard*

ICT-related activity on the island remains poorly co-ordinated and there is awareness that this has led to the duplication of effort, epitomised in the following exchange between Bill and Richard:

> *Richard*: The island is a great place in a lot of ways. There's a lot of strengths, and a lot of skills and abilities and so on here. It's just so small, for you to actually do things successfully...
>
> *Bill*: So as soon as one person's had an idea either someone else has had it at the same time or somebody's jumped on the bandwagon... There'll be someone else who'll think 'I'll have a shot at that!'
>
> *Richard*: So what happens is you end up with this diluted effort and it's not worth doing.

Sometimes fierce, the inter-actor rivalry that has developed in the vacuum left by the retreat of the state has further hindered local engagement with ICT. There is some sense of unity within the Arran islanders' narratives, but notions of an 'imagined community' (Anderson, 1983) lack the same substance that is found in either Islay or Jura. When a shared sense of destiny is actually expressed, it is adversarial in its outlook, framed in opposition to the closer administrative ties with the mainland which have been enforced on Arran following the tourist board rationalisation that accompanied local government re-organisation (this issue is explored in depth in Chapter 8). Efforts to assert the 'uniqueness' of the island are frequently predicated upon aesthetic, rather than welfare, grounds and there is no real sense of social solidarity. The narratives of the actors recognise this sense of fragmentation, sometimes referred to as the perceived 'suburbanisation' of the island which has followed in the wake of successive improvements to the island's car ferry service. They quite clearly believe that the *gesellschaft* structures that they describe are implicated in the belated and piecemeal deployment of ICT on the island.

4.1.2 The island of Islay

Islay is home to one of the earliest examples of a grant-aided ICT initiative in rural Scotland. A telecottage was launched on the island in late 1989, following the successful application by the Islay and Jura Council for Voluntary Service (I&JCVS) to the Highlands and Islands Development Board (HIDB) for special funding (see Chapter 5 for further details of the original negotiations). The telecottage – or Community Teleservice Centre (CTC) as it was more properly known - has not survived in its original form but has subsequently merged its remaining resources with the *Ileach* newspaper, which is also funded through the I&JCVS. The resulting organisation, *Ileach* Teleservices, has maintained an online presence for five years now with financial support from the Scottish Office (via I&JCVS) and the Lotteries Commission.

In addition to the *Ileach* site (*http://ileach.co.uk*), the Islay Marketing Board site (*http://isle-of-islay.com*) also provides a forum for local tourism-based enterprises to advertise their services, and both are run by the same individual, Brian. A smaller third site (*http://islay.co.uk)* also promotes a handful of local businesses. These community web-sites are linked with the homepages now established for six of the eight[4] brands of whisky produced by the island. Although none of the distilleries actually use designers on the island, their managers have co-operated fully with community enterprises to ensure that their produce can operate as a 'gateway' to the rest of Islay[5]. This contrasts with Arran where linkages between the island's various community-run and commercially-orientated web sites are extremely limited (see Chapter 8). Other local businesses on Islay, especially in the tourism sector, make extensive use of the island's on-line marketing services, although there is limited evidence of novel new types of telework being conducted on the island. In total, only four teleworkers were identified during the course of the research, including Brian[6].

However, ICT is deployed in other quite noteworthy ways on Islay. The island is an area that has benefited greatly from Strathclyde Regional Council's decision to link remote out-lying schools via a dedicated intranet service, now developed into a sophisticated video-conferencing system. The Modern Communications for Teaching and Learning (MCTL) project was initiated in the late 1980s and most of the out-lying Argyll schools, including Islay's Port Charlotte and Port Ellen primaries, have benefited from the use of networked Apple Macs for over a decade now. This puts them substantially ahead of the majority of the UK's schools that are only now, with

the demands of the National Grid For Learning (NGFL), guaranteeing the provision of ICT. Children benefit from video-conferencing with other schools, sharing scant resources and teaching expertise in important areas such as Gaelic (see Chapter 6).

Extensive and embedded use of ICT is therefore evident on Islay, in marked contrast to Arran. For over a decade Islay has enjoyed an on-going commitment by both endogenous and exogenous forces to secure some degree of obduracy for successive initiatives. Here, as in Arran, it is noticeable that incomers to the island are disproportionately involved with ICT initiatives. All of the digerati interviewed were originally migrants to the island, although most are now of long-standing residence of fifteen years or more and are highly motivated by community concerns. Brian, an incomer himself, views Islay as a highly inclusive society in this respect.

> If you go to the likes of Cowal highland games there's always a march past at the end of all the bands, and the cheer that the Islay pipe band gets is way out of proportion to any musical ability we've got at all. We are generally third of fourth from last in the bottom group because we only compete once a year. We're just not that good and the cheer we get is out of all proportion because *it's Islay... it's that wee island.* *Brian* (emphasis added)

Yet, despite the great efforts that have been made, Islay still continues to experience a slow bleed of youthful out-migrants seeking work. While both community groups and state agencies have a long-standing commitment to see the island's employment opportunities improved through the use of ICT, unresolved conflict between them has, at times, retarded the development process. For instance, while AIE are keen to promote new 'vertical' uses of ICT – such as web design and software development – I&JCVS are far more concerned with strengthening the existing industrial base (rooted largely in tourism and agriculture), thereby applying ICT in a 'horizontal' sense. Anne (the head of I&JCVS) is currently seeking to attract a call centre to the island which would provide work for younger, often poorly skilled cohorts. In contrast, the more ambitious AIE would prefer to eschew such 'back office' work in favour of policies aimed at encouraging a cache of skilled teleworkers to develop in the region, many of whom are likely to be migrants. These conflicting goals have, as the next chapter will examine in detail, reduced the overall effectiveness of some undeniably innovative behaviour.

4.1.3 The island of Jura

With only 200 residents, Jura's is the smallest population surveyed. In total only three individuals were encountered who were using ICT professionally. Quite notably, all came to light through the advertisement placed in Islay's *Ileach* newspaper and, given that so few people live on Jura, this was, by far, the highest per capita response received. Jura Stores and the Jura Hotel, the only non-agricultural enterprises on the island other than the distillery, each have their own web sites that provide useful information for tourists about the island[7].

There has been no formal intervention by grant-giving agencies with respect to ICT. Mindful of Jura's low priority status amongst local state agencies, the island's community has recently formulated a regeneration strategy, in association with the Corrom Trust. The Jura Development Trust has four principal aims, namely to maintain population, to retain and safeguard existing primary sector jobs, to provide more affordable housing and to encourage innovative ways of providing services and jobs which are appropriate to the needs of such a small rural community. ICT is cast as a critical resource within this schematic, with the Trust noting that:

> Life on Jura can still be a struggle for those who do not have regular employment. People have to be able to be flexible and ingenious enough to turn their hand to a few jobs in order to make a reasonable living. Often, however, those who would like to stay on the island are forced to go away for periods to get work or indeed leave for good. There is some hope that Information Technology and improving telecommunications may provide opportunities for teleworking.
> (Jura Development Trust, 1998, 2)

Employment on the island is mostly provided through fishing, maintaining the large hunting estates and work in the distillery and Jura is seen as largely self-sufficient and predominantly agricultural by local agencies[8], although it recently received a £1 million grant for a new car ferry after protracted negotiations. As the Jura Development Trust (1998, 3) also notes, 'Jura would benefit from having a slightly higher population which would make many of the essential services more sustainable or economically justifiable'. Donald, the leader of the Jura Development Trust, believes that ICT could help, in this respect, to reverse a century of population decline by allowing new teleworking opportunities to be pursued by both existing residents and incomers. If ICT can help locals 'stay in their homeland' then there will be clear community benefits. Equally, he is of the opinion that email and Internet access may help redress the 'sense of remoteness and isolation' that he has seen affect

previous incomers 'after a few months'. Donald suggests that if ICT can slow the high turnover of these migrants then it will be of great benefit to Jura.

However, due to the lack of available housing in-migration to the island can only occur at a very slow rate, regardless of any new teleworking opportunities. Currently there are only 143 houses on the island and as Martin, Jura's first teleworker, explains, 'I was lucky to get the opportunity to try my hand at teleworking on Jura because my wife got the nursing job on Jura (albeit part-time) and a house was made available for her. I was able to take the initial risk of giving up my job and trying the telework idea'. Another problem facing potential teleworkers is that Jura has not been provided with ISDN, nor has its telephone exchange been recently upgraded given that it has such a small population. This seriously hinders modem usage and Martin experienced great difficulty on this account following his arrival in 1997 (see Chapter 7 for further details).

Failing the direct rejuvenation of the island through the adoption of ICT-related employment, the Jura Development Trust has identified a further means of attaining their goal that equally depends on ICT. Details of the proposed heritage and ecological centre - the most ambitious part of the Trust's plan - are now available on-line (*htttp://www.members.aol.com/isleofjura*) in conjunction with a plea for funding support[9]. The web therefore becomes a useful tool for 'recruiting' Jura alumni in an hour of need. Financial pledges to the Trust have already been made by Americans and Canadians who can trace their ancestry to the island. Donald also notes that the use of ICT may be beneficial to the development plan due to the aura of sophistication that it lends. 'I think probably they find it quite impressive,' he explains, referring to the Trust's sponsors, 'you know, they see Jura as kind of out of the way'.

4.1.4 The Kintyre peninsula

Very little ICT-related activity is discernible in relation to the size of Kintyre's population. Despite having a population of over 10,000, the area provided the lowest direct response rate to the newspaper advertisement, placed in this instance in the *Campbeltown Courier*. There were no replies at all and all of the individuals interviewed in Kintyre were approached directly using the Yellow Pages. Current 'vertical' usage of ICT within Kintyre includes Argyll Software, run by Rob and Isla, who service PCs in the Tarbert area and telework by providing computer training and support for businesses as far away as the island of Colonsay. There is also The Tree

of Life, a small Christian collective of teleworkers in Ugadale who service computers for firms in Campbeltown. The contrasting histories of these two socio-technical ensembles are examined in depth in Chapter 7. Other than *Kintyre Online*, a rather limited online resource provided by the Kintyre Marketing Group[10] (*http://www.kintyre-scotland.org.uk*), there is little evidence currently[11] of any professional ICT activity within Campbeltown, despite its housing half of Kintyre's population. Nearly all of the ICT enterprises that were encountered lie further north towards Tarbert[12].

The exception is Kintyre Data Processing (KDP), a Campbeltown company which continues to make some limited use of ICT. KDP was one of the UK's very first data-processing firms, established in the early 1970s. Its remaining operative, Willie, explains that:

> It was quite a sophisticated service, ahead of its time. Anybody that needed a computer service, the only way they had access to it in those days, locally, was Kintyre Data Processing. And you know that sort of ran its course until micros started to become more available and people started finding out about them and then a lot of the customers that were using our stuff sort of bought their own machinery and started to do it themselves. *Willie*

It transpires that this problem of obsolescence - of technological advance quickly eradicating the need for 'central place' services - was repeated with a short-lived telecottage established for the area. One of the six pilot Community Teleservice Centres established by HIDB in the early 1990s (previously mentioned in Chapter 3) was sited close to Tarbert but failed to survive beyond its initial period of funding.

Following the financial failure of the CTC, Crossaig, a firm established in 1993 some twenty miles north of Campbeltown, attempted to provide community work on behalf of Elsevier pharmaceuticals following the Scandinavian model of telework out-sourcing (Qvortrup, 1993). It proved impossible to speak directly to the originator of this scheme, who still lives in Kinytre, but others remembered it well and offered explanations as to why it did not succeed on the scale originally intended. Villagers in Crossaig typed transcripts of medical conferences out but the scheme was not cost-effective. Despite their lower cost per hour, the local typists took longer to complete the transcripts than had been anticipated, while the cost of data transmission proved to be higher than expected. Crossaig is not actually served by ISDN and standard telephone lines had to be used at great expense.

Closer analysis of the trajectory of technical development followed since the late 1970s, therefore, reveals a long history of use of ICT in the region, despite the relative

paucity of present applications. An important issue is brought into focus here, which frequently figures prominently in later chapters, namely *obsolescence*. Early initiatives introduced to the area quickly became redundant because technology refresh - of both desk-tops and telecoms - is an overhead that is easily overlooked by ICT start-ups. Expensive dedicated systems are rapidly superseded by desk-top packages to the extent that local clients no longer require 'central place' services.

Service providers can only survive if they subsequently invest in a new generation of ICT for which there is a market. Following the failure of such early indigenous attempts at 'vertical' usage to sustain themselves, AIE now treat the successful encouragement of new ICT start-up firms in Kintyre as a priority[13], particularly in light of a dismal financial down-turn in Campbeltown following the closure of the local naval base. Lacking the more romantic appeal of the islands, Kintyre never developed a financial base in tourism to the same extent as either Arran or Islay and desperately needs to diversify its economy.

Although AIE are the principal force attempting to foster the uptake of ICT in Kintyre, Argyll and Bute Council (ABC) also has nominal responsibility for its deployment in the region. In common with North Ayrshire Council, ABC has faced a number of obstacles to the development of any kind of co-ordinating policy within the region. Until April 1996 the Argyll area was, crudely put, subsidised within Strathclyde Regional Council. Strathclyde recognised its rural nature and the special needs of the islands and skewed its budget accordingly. 'What we now find is that we don't have the protection of Strathclyde - we're one of the mismatch councils' claims Graham, head of IT Services at ABC, admitting that funding is a serious worry if infrastructure is to be maintained. 'We're arguing in terms of areas for assistance based on our percentage of GDP, he explains, adding that 'it's kind of a novel thing to be arguing and waving around "yes, we've got a lower GDP than you have!"'

(compare with Milbourne, 1998). In addition to financial concerns, he cites a list of contingent influences on ICT policy which he claims have curbed his department's ability to involve itself with community affairs.

> As a council I'm looking at *our* development programme and we're a good 2 or 3 years away before we would be ready to adopt a leadership role, we haven't got the year 2000 behind us, we have to get ourselves organised, assess where our priorities are - we've got elections next year, we've got Scottish parliament next year - and I think we are 2 or 3 years away before we would be ready to assume any kind of serious leadership role. *Graham* (ABC)

There is agreement amongst Kintyre's digerati that ICT could, if deployed creatively, yet be an excellent resource for providing new employment and helping existing businesses to prosper. However, Willie describes a crisis of confidence in Campbeltown that precludes innovation amongst the business community. He explains that 'it's extra money all the time, and it goes back to the *confidence* thing. Nobody is willing to spend the time and the money in taking the chance that it might bring a benefit to the business because they're not *convinced* they will have a benefit'. Roland, who is a relatively recent incomer, adds that 'we haven't got the cohesion here you would have on Islay, where everyone knows everyone and they're very supportive. There's very much this community sense there'. There is agreement amongst those interviewed from Kintyre that although the area is, in many ways, as remote as the islands, it lacks the social cohesion, the common consensus for change and the determination to seek out new solutions that is found on Islay.

	Arran	Islay	Jura	Kintyre
Local Council	NAC	ABC	ABC	ABC
AIE Priority status	No	No	No	Yes
Corrom Development plan	No	Yes	Yes	No
ICT-orientated firms*	4	3	0	3
Community-run web sites	2	3	1	1
SMEs with web presence (excluding hotels)	3	6	0	0
Hours from Glasgow**	2	6	7	3
Current Population***	4,743	3,540	200	10,957
Demographic trends	Recovered to 1881 levels; now stable	Unchecked decline since 1831	Greatly reduced since 1901; now low but stable	Variable history, currently in decline
Other notable applications	-	On-line schools; Site of pilot CTC(survives); On-line *Ileach* news-paper	-	Site of pilot CTC (did not survive)
Nature of ICT usage (summary)	Innovative yet uncoordinated and highly contested, lacking subsidy	Co-ordinated and innovative but heavily dependent on external subsidy	Marginal use	Previously innovative, current usage marginal
Countryside 'type'****	Contested	Clientilistic	Paternalistic	Clientilistic

Table 4.1 ICT in the case study sub-regions

Notes: * These most recent estimates are based upon the details included in the AIE on-line skills register, recently updated to include businesses on Arran (*http://www.aie.co.uk/it_serv/bot_supp.htm*).
** Estimates are based upon a combination of car ferry and road travel.
*** Figures taken from 1991 census (McLellan, 1995; Newton, 1995, 1999).
**** Derived from Marsden *et al.* (1993); The assertions here are based upon the survey group attitudes, taken in conjunction with secondary sources such as local newspapers and estimates of levels of state assistance throughout the region.

In contrast to all the islands surveyed, Kintyre currently lacks lead actors within the community who are attempting to stimulate greater amounts of ICT-related activity throughout the peninsula as a whole. This supports the findings of Bryden, Fuller and Rennie (1996, 43) when they claim that the role of such local 'champions', whose task it is 'to encourage and stimulate local engagement and participation', is vital if rural communities are to make sustainable gains from the information age. It may well be that such 'champions' find it easier to align their own actions with community interests in more clearly-bounded locales such as islands. This certainly appears to be the case in rural Strathclyde although, as the example of Arran has shown, it is not in itself a sufficient condition to guarantee proactive and uncontested deployment of ICT.

4.2 Geographies of enablement and constraint: the determining factors

Firstly, this section critically assesses the extent to which spatial variations in the uptake and nature of ICT activities in the study area substantiates recent theoretical developments in rural studies concerning the highly 'differentiated' post-productive countryside (Marsden *et al.*, 1993). Tentative cause/effect comparisons are then drawn relating the broad pattern of activity (summarised in Table 4.1) to a range of possible enabling/disabling factors. Following the arguments of Castells (1996), critical understanding is sought of the ways in which the contingency of technical development has been structurally constrained in the areas surveyed. The main themes that emerged from the narratives of the actors[14] are as follows:

- formal political institutions, their practices, priorities and catchment areas.
- local employment structures, local multipliers and service catchment areas.
- the sustainability of the technologies themselves.
- prevalent social attitudes and skills of incomer groups and established communities; housing supply for incomers.

4.2.1 Formal political institutions, their practices, priorities and boundaries

There is no simple correlation between technical development and the actions of state-funded agencies. Differing priorities and over-lapping political boundaries produce a complex pattern of involvement. Usage of ICT in Arran is certainly underdeveloped

relative to the size of the population and this may reflect the limited investment that the island has received. However, Kintyre, despite its priority status for AIE and NAC, is something of an ICT desert - despite an auspicious head-start in the 1980s. If Campbeltown is a 'black hole' of informationalism (Castells, 1996) within the context of this study, then it is neither through lack of political intervention nor lack of early opportunity.

Failure to secure the universal provision of ISDN may have had some impact upon patterns of activity although, as Huws *et al.* (1996) note, the continued failure of BT to make data publicly available precludes any such causal explanation being advanced. Certainly there is talk of work being conducted in spite of, rather than because of, the local infrastructure in all four locations. Parts of the region, notably Jura, are still waiting for the upgrading of their exchanges and are unlikely to receive ISDN in the near future unless there is a sudden rise in demand. BT do consult AIE about such matters and Melody (AIE) explains that 'we've been asked to rank them in priorities because they thought that we would know if there's anybody desperately waiting to utilise it'.

However, no overall strategy is clear in respect to the physical availability of ISDN. It has been noted that the provision of ISDN to Arran was in fact fortuitous rather than strategic and that NAC are currently unclear who, if anyone, has benefited from its installation. In fact, the majority of the survey group does not use ISDN and instead adopt a 'make-do' attitude with respect to conventional 'phone lines. They rely on standard links for the transmission of smaller files, which in the majority of cases (transferring computer programs, text files, business accounts) do not make excessive demands for bandwidth.

4.2.2 Horizontal employment structures, local multipliers and catchment areas

The majority of the larger SMEs throughout the entire region now have a web presence, although it is notable that most of them out-source the content design to firms sited outside of the region and do not generate work for local web designers, of whom there are several. Isle of Arran Distillery, for instance, uses Aardvark, an Irish firm. Islay's distilleries are all owned by large corporations such as United Distillers who have no direct financial incentive to out-source such work to Islay. Equally, the multimedia skills available locally may simply not be adequate, a point conceded by the leader of the Islay and Jura Council for Voluntary Service (I&JCVS):

> We didn't have the *expertise* to get the price right for them [*a distillery*] to say 'well, you do it'. We really wanted to keep that work on the island but we couldn't do it so that contract was lost to someone else who was more competitive and could do it. So there are lessons to be learned. *Anne* (I&JCVS)

For all the talk of diversification, the dominant use of ICT within rural Strathclyde, as demonstrated by the survey group, has been in buttressing existing employment structures, especially tourism, although the degree to which alternatives have been pursued varies from island to island. In contrast, opportunities to make a living purely from information management, or through selling and servicing ICT hardware and software, are limited. Local markets are small and firms must compete for small amounts of trade, especially on Arran.

4.2.3 The sustainability of the technologies themselves

ICT – both hardware and software - has a tendency to rapidly be superseded by new products. The issue of sustainability, as it arises in relation to the on-going usefulness of equipment provided for rural communities, was not factored by those involved with pilot CTC projects in Islay and Kintyre. Expensive equipment intended to service entire communities rapidly falls in price until it is within reach of many households. Firms who are heavily reliant upon providing services by leasing such equipment may rapidly find their custom falling below its threshold level, the prime example of this being KDP in Kintyre. Most basic PC software packages now include data-processing software for accounting that is far superior to what KDP originally offered.

Increasingly, these rapid rates of 'technology refresh' have also affected the hardware suppliers on Arran, Islay and Kintyre who find they cannot compete with the aggressive pricing of large mail order firms such as Time and Tiny who improve the technical specifications of their packages on almost a monthly basis. As these firms do not offer free technical support to non-mainland areas of the UK, local firms still have one advantage to offer their potential customers but ultimately all agree that it is increasingly a struggle to stay afloat. Andrew has recently made the decision to stop offering complete systems to Arran islanders because he cannot afford to guarantee 12-month warranties anymore. Rapidly changing specifications make it hard for him to secure replacement parts for his customers if anything goes wrong.

The third area of concern is the area's telecoms. The nature of ICT is such that rounds of investment - the processes that Massey (1984) identified as crucial to the

'sedimentation' of economic landscapes - are greatly condensed in contrast to those associated with older analogue technologies. Already parts of rural Strathclyde bear the scars of previous rounds of digital investment but must still compete to partake in new ones. For instance, many of the pioneer teleworkers in rural Scotland, using what are now regarded as very slow and out-dated (pre-Pentium) desktop machines, were able to work competitively on a reasonable par with firms in core urban regions, even through standard telephone lines. However, as desk top capacity (measured principally through processor speed) continues to increase exponentially firms operating in graphics-heavy mediums such as web design are expected to be able to send and receive much larger files by their clients. Consequently, access to a high bandwidth becomes less of a luxury and more of a necessity, causing concern for areas such as Jura that are still waiting for a basic upgrade. Cases of firms migrating away from remoter areas have been reported in the Shetland Islands, offering a particularly salutary lesson of the consequences of neglected telecoms[15].

Of further concern is the fact that ISDN is now set to be superseded as an industry standard, most probably by ADSL (Asymmetrical Digital Subscriber Line) or WAP (Wireless Application Protocol) technologies. ADSL upgrades existing copper wire telephone lines without rewiring and delivers speeds more than 15 times faster than ISDN. In the US it is available as an 'always on' service and BT originally expected to have made it available to 400 exchanges serving 6 million households in the UK by March 2000 (*Guardian,* 1999a). It will offer vastly improved opportunities for video-conferencing, one of the most highly applauded uses of ISDN in rural areas, but is a technology that does not work well over long distances. Oftel (the telecoms watchdog) has already warned that there may be problems bringing it to remoter areas (*Guardian,* 1999b).

Very quickly, access to ISDN - the jewel in the crown of the Highlands and Islands development strategy during the 1990s - will cease to be in any way remarkable, a point which is not lost on the region's policy makers:

> Desktops themselves are developing very, very quickly but the coms are not developing as quick. In some ways we benefited a lot earlier on, largely it has to be said through the foresight of HIDB... but the difficulty is that of course ISDN itself doesn't really develop the bandwidth that some people need now for the companies that expect it. *Graham* (NAC)

> Highlands and Islands have been early interested in getting ISDN etceteras around the area, which is a bit of a pity as it's going to turn out that ISDN is superseded yet again... But you always have to make a stab at some stage. *Charles* (AATB)

Far from gaining independence from centralised funding, telecoms may perpetuate and even increase the region's dependency if state-of-the-art links are to be maintained.

4.2.4 Prevalent social attitudes amongst incomer groups

ICT may service existing employment structures and social needs in rural areas. Alternatively, it may be viewed as a resource that encourages new migrant workers to a region. Incomers are disproportionately involved with the ongoing deployment of ICT in rural Strathclyde and state agencies recognise the important role that they play. Where there is low involvement by the state, noticeably on Arran, almost all of those who are most heavily involved with ICT are incomers, of varying longevity.

Rural Strathclyde's digerati includes a highly specific cohort of incomers from the 1970s who originally chose a self-sufficiency route in the mid-1970s, eschewing professional employment in urban core areas. Their collective experience is examined in detail in Chapter 7, particularly the ways in which they have returned to previously abandoned careers - the 'Rip Van Winkles' of the isles. Quite noticeably, however, they are by now integrated sufficiently well into the communities of which they are a part to have developed partisan beliefs that inform the technical choices that they make. They are pro-active but often in ways which conflict with formally sanctioned initiatives, exhibiting low tolerance to centralising forces when their presence is felt, particularly on Islay and Kintyre.

> I think it would be dangerous for any authorities... to come in at a higher level and say 'we want to co-ordinate this, we want to organise this, we want to rationalise this'. *Rob*

> If there is a sustainable future on Islay it will come from people running successful businesses, it will not come from people being encouraged. People don't want to be told what to do. *Dave*

As the youngest teleworker in the survey, aged 31, Richard notes that some of the more vocal promoters of the Internet on Arran, 'aren't the kind of people who particularly want to be co-ordinated by some government agency whose motives are dubious'. Theirs is often a radical ideology that runs quite contrary to the conservative information society thesis derived from Bell (1973). The functionalist expectation that rationally minded people will always use resources to maximise profits proves to be ill founded in this set of instances. Geographers such as Smith

(1971) first acknowledged that industrialists often make do with satisfactory, rather than optimum locations. Such people were termed *satisficer men* (sic). The term satisficer can also be applied in a similar sense here.

As Richard says of some of his digerati acquaintances, 'they're not the kind of people who are chasing that sort of life,' indicating that not all local actors will attempt to maximise their financial position within the structures that are shaped by agencies such as HIE. Indeed, economics may be secondary to political or cultural concerns, as in the case of Arran where the web site developers are arguably as keenly motivated by the opportunity to portray Arran as unique and independent of North Ayrshire as they are by a desire to maximise their own profits - as will be shown in greater detail in Chapter 9.

> This last week in October, it's about the peak time to let people know that we're in the business of selling PCs and one little advert - only about 20 quid - could probably bring in umpteen enquiries from people ... And I'm aware of that opportunity and ignoring it so I won't be swamped. *Rob*

The attitudes of this particular group are clearly recognised by the development agencies operating in the region.

> The ones that are keen to grow immediately see the potential, the others don't *but they're probably quite happy as they are*... I think most people that choose to set up a business here or inherit don't really see themselves eventually being quoted on the stock market, they're content to run a reasonably small business... some are quite happy just to live in a nice place and have enough money to eat and replace the car every few years. *Melody* (AIE) (emphasis added)

In contrast, the younger digerati are more ambitious and keen to develop their businesses. They are, as a consequence, frustrated by a perceived lack of co-ordination between government agencies in addition to the limits to growth that persist in the region, such as limited markets and unreliable network links. Andrew, Richard and Martin, who are all in their thirties, express frustration in relation to their attempts to thrive economically while enjoying the benefits of rural life. 'I didn't come here to be semi-retired and play at this,' explains Andrew, 'I took a huge risk because I wanted to live here and I had to make a living'.

4.3 The politics of ICT: strategies and structures

The dangers of an unproblematic assumption of the information society thesis are clearly understood by field operatives such as Melody (AIE) who explains that:

> I think we've learned from our mistakes... people thought all you had to do was get a computer and work would just come rolling in to you, and it ain't as easy as that! ... It's not the saviour of the world but it's a very useful tool, and one that I think is increasingly being seen so *Melody* (AIE)

There is great reticence on her part to attempt any real strategic control of development in the region, budgetary restraints not withstanding. The two local councils, in contrast, are in agreement that they would like to take a cautious role in shaping the uses of ICT in the region,

> As you know, certainly with the new government coming in they were putting an emphasis on local government accepting its leadership role in the community... It does concern me that we're not really leading in our, kind of like, community leadership role. It's something that we're going to have to focus our involvement. *Graham* (ABC)

> I don't think it's through lack of will, I think its probably more through lack of time because everybody's so busy trying to do what they're currently doing and trying to do what they're currently doing better. *Elma* (NAC)

However, both councils have shared several impediments to their attempts to move beyond a simple role as infrastructure providers.

1 *Institutional reforms* have necessitated a full overhaul of internal computer systems, leaving little freedom to manoeuvre in a creative capacity within the wider communities that are served. The pressure to meet internal demands has been such that NAC admit to having actively down-played the possibility for community involvement. Graham (ABC) explains that 'even with the year 2000 for example, we've fought shy, on guidance from the local chief executive and the leadership, about advertising too strongly about what we're doing, in case we are perceived as being a font of knowledge that people can go to.'

2 *The loss of continuity and skilled personnel* has, at times, accompanied local restructuring. Many of those who were involved in early phases of ICT development for Strathclyde Regional Council were not retained following its

dismantling. Graham (ABC) notes that 'when we were dis-aggregated we lost most of our expertise at acquiring grants.'

3 *Loss of economies of scale of Strathclyde* has meant that local councils need to reduce expenditure in many areas. ICT is, of course, a means to achieve such ends. Elma (NAC) believes that rural councils will soon be 'looking at how they can use that type of technology for other service areas... not so much to affect how they provide the service to people but it's about how they make savings in providing that service.' Video-conferencing, she notes, can give 'a fairly quick payback if you do it right.'

4 *Fears over the millennium bug* have meant that council staff have concentrated their efforts through 1998 and 1999 on testing existing systems for Y2K compliancy. 'So the focus has been on ensuring that we've got our own house in order. 2001, we'll get going after that!' claims Graham (ABC).

5 *The introduction of ADSL and WAP to core urban areas* looks certain to trigger fears that rural areas will be left behind. Once again councils may have to adopt a lobbying role as infrastructure gatekeepers with little freedom to work creatively in tandem with the users of the materials they provide.

6 *An uncertain future for IT departments* may also limit the commitments that can realistically be made. Within the new structures of North Ayrshire, IT is a department in its own right, sitting within the Chief Executive's directorate, which had not previously been the case during the days of Cunninghame District Council. However, faced with financial cutbacks, this may not be sustainable and Elma (NAC) is particularly concerned by the number of local councils that no longer have an actual IT director with direct responsibility for formulating local policy, noting that 'there's very few directors of IT left in Scotland, which I have to say, as one of a group of heads of IT, we don't think is particularly encouraging and we're concerned about the strategic view of IT and its use in Scotland.'

4.3.1 Establishing priorities

NAC and ABC have, to date, concentrated most of their efforts on providing better telecoms infrastructure. Graham (ABC) suggests that ideally they might look to procure 'a better deal' for bandwidth charges in remote areas. An ideal division of labour, in his view, would involve the local council assuming heightened responsibility for infrastructure while AIE promote its use by the individual businesses. Given current concerns with the rapid pace of technical developments, Graham is especially concerned with keeping the area's telecoms up-to-date to allow any businesses to retain a competitive edge. Given the relatively small size of the population, it will always necessitate some degree of financial and political support from local government. The market, acting alone, is unlikely to act quickly.

> The population can't justify the support, the kind of maintenance and rental costs the annual revenue costs of that kind of link. That's a major worry for us because that's the kind of thing that if you're gonna get telecottages and teleworkers operating efficiently... We do see it as being quite important that we keep the technology within the infrastructure current. *Graham* (ABC)

Some degree of prioritisation is therefore necessary, particularly on AIE's part as they are left, de facto, as the sole state-funded agency able to actively be involved with the users of telecoms at a local level. The small size of the department (four members) demands that priorities must be established and acted upon, both in terms of the nature of the type of activity that is encouraged in the region, and the areas where efforts are concentrated. However, the priorities that AIE has chosen are often heavily contested by the local digerati. The interpretative flexibility of ICT - the plurality of meaning that is invested in them by different social groups - is a theme that is pursued in greater depth in following chapters. It suffices here to simply outline some of the recurring tensions that surface in the narratives of the survey group.

Melody (AIE) favours the adoption of a strategy that aims to secure a more favourable niche for the region within national divisions of labour. She claims that her main aim 'is to develop the small start-up IT businesses because we see them as potential employers in the future... we try not to be a source of low level IT advice'. She further qualifies her emphasis on fostering new businesses as an attempt, quite admirably, to avoid a state of dependency:

> There are a number of small businesses in our area who're starting to develop completely new work, particularly internet based work which I really find interesting *because that's not relying on some big company elsewhere* to say 'here you are have a few jobs'...At the moment that's what I'm interested in, looking at what new kinds of work are coming out of the information age and whether we can get a piece of that work rather than conventional out-sourced work. *Melody* (AIE, emphasis added)

However, a high proportion of such start-ups has been established by incomers to the area and AIE is charged by local actors with neglecting an opportunity to encourage existing businesses to use ICT through subsidy. 'They've got what I call a serious fault in terms of thinking big and forgetting about the small businessman who really could do with some direct support and their thinking big has landed them a few white elephants,' claims Anne (I&JCVS). Many of those spoken to perceived that AIE is more interesting in fostering new hi-tech ventures - to justify its own continued funding, for which business start-ups is a crucial performance indictor - than it is in deploying ICT creatively to assist existing employment structures and their social fabric.

> They're not willing to assist you to keep afloat. You've got to show them that you're gonna create employment or it's a serious case scenario. And that I think is one of the reasons why local businesses in this area don't really seem to want to have much to do with these types of organisations because they know from past experience that's the kind of response they'll get going back, well, the last 20 years. It may change but I think the perception is still there, that we're wasting our time even applying for this because in the past we never got it. *Willie*

Throughout the region, the digerati are uncertain as to what might be reasonably expected of their local state agencies. Most, like Willie, have little faith that AIE will take an interest in helping existing businesses exploit the marketing opportunities afforded by ICT and this suspicion appears to be born out in Melody's remarks. She makes it clear on several occasions that AIE do not have the resources to co-ordinate a holistic ICT 'strategy' in the region which embraces both 'horizontal' and 'vertical' usage. If the IT departments of the local councils continue to focus their efforts primarily upon lobbying for better telecoms in the region – as Elma did so successfully with the belated introduction of ISDN to Arran - it is uncertain who, if anyone, is responsible for optimising local outcomes at the *user* interface. Certainly the view held by non-governmental agencies in the region is that there has been little attempt to co-ordinate activity in the region. Although attempts at centralised planning are most often regarded with suspicion by the area's digerati, there is also

almost universal recognition that, in this instance, failure of the local state to play a greater role in co-ordinating activity may be proving to be counter-productive.

> I think the sense of a strategy is non-existent. People are working *each* in their own wee corners and are trying to do their own wee bit to perhaps create their own business that will attract an income and nobody's actually thinking strategically about the best way to use the technology that's around us and the expertise. To be perfectly honest I think it's more a role for AIE than I do for the council... But not go off in a corner and develop themselves a *business* strategy we're going to use, but to get a *community-wide* strategy, an area-wide strategy that involves more people. *Anne* (I&JCVS)

> But it needs to be integrated and it needs to be something so that you don't end up with 5 or 6 groups of all these individuals on the island or anywhere else all trying to do slightly different things, all with the same basic aim but all pulling in slightly different ways. Which is bound to happen because the statutory body, whoever that may be, the council or AIE, aren't taking a big lead. You know, they're not picking, they're not shaping this, they're leaving it to individuals and individual groups, which on the one hand is great because that's when it's non-governmental and so on. But at the same time for it to work, because it's a small catchment, because of the viability, I think there does have to be some kind of co-ordination. *Richard*

4.4 Conclusions: a new reflexivity - catalysing partnerships?

In aggregate terms, the extent of ICT activity in rural Strathclyde is surprisingly low given the early roll-out of ISDN and CTCs in the region. This low uptake appears to be indicative, in part, of challenges faced by local state agencies during the 1990s that have hindered attempts to capitalise upon the phase of cyber-boosterism inaugurated in the late 1980s. In particular, re-organisation of local government and tourist board structures restricted the freedom of these bodies to manoeuvre in a guiding capacity during the latter half of the 1990s. This has had clear effects on the geography of technical development. Subsequent state-led investment and awareness-raising exercises conducted by state agencies have proceeded in a piecemeal fashion. Local populations have, in consequence, often been left largely to their own devices and there is no evidence of either large-spread spontaneous in-migration of teleworkers or of established residents creating new employment opportunities through the deployment of ICT. Other structural influences such as continued technical problems associated with distance working in the most remote areas, restricted local markets and difficulties in successfully accessing wider markets continue to restrict ICT usage.

Patterns of engagement with ICT within the region are clearly variegated, in line with the 'differentiated countryside' thesis proposed by Marsden *et al.* (1993). Notably, innovative and productive uses of ICT are most often associated with

marginal areas with entrenched social problems and a clear 'clientilistic' agenda, especially Islay (the same pattern is repeated on a Scotland-wide scale with far-flung areas such as the Hebrides and Shetlands long-acknowledged as leaders in the field). However Kintyre, a marginal area once at the vanguard of innovative ICT-related activity, is now regarded as something of a 'desert' by AIE, highlighting the frequently unstable nature of socio-technical relations in rural areas.

With most of the initiatives surveyed here still in their early stages, it is too early to expect to see a correlation between ICT usage and rising local affluence. The high hopes attached to 'dot.com' development in the region have yet to be realised, as much as they are with large corporations now embracing the Internet as a business tool. It would certainly be premature to assess whether focused use of ICT has resulted in a lessened state of dependency in each of the four sub-regions given the uneven social and economic geography of the area prior to the technical developments under discussion. Indeed, given that innovative ICT usage has been perceived as a panacea for areas with entrenched social problems, an apparently inverse relationship makes it difficult to actually correlate, at this stage, ICT with the amelioration of local conditions.

The introduction of ICT has contributed to local change in far more subtle ways. While not necessarily catapulting the region into the higher echelons of national GNP contribution, it has had other less obvious effects upon the political and social economy of island life. It has acted as a catalyst for re-negotiating existing relations, forming partnerships and serving as a focal point for agencies such as AIE and I&JCVS to debate their conceptions of local need. In this sense it is as active an agent of change within these communities as the human actors who have provided their thoughts and insights. It is these themes of negotiation, partnership, conflict and power which will be examined in detail in the following chapters using a theoretical framework which draws in particular upon science and technology studies conducted by Bijker, Callon and Latour. Micropolitical processes are examined in much finer detail, while remaining mindful of the broader social, economic and political constraints that have been outlined in this chapter.

Notes

[1] Evidence of these latter cases only emerged at the end of my final visit to the island and interviews could not be arranged.

[2] This may be viewed at *http://www.aie.co.uk/it_serv/bot_supp.htm*. In September 1999 there were still no Arran suppliers listed. However this resource has now been updated to include Arran businesses (last accessed May 2000).

[3] Project Orchil is supported by the Lotteries Commission. Aimed especially at middle-aged women returning to work after raising children, traditional weaving skills are taught, and Internet advertising is a central tenet of the marketing strategy.

[4] Sites now exist for Laphroaig, Ardbeg, Lagavulin, Bowmore, Bunnahabhain and the popular blended whisky, Black Bottle.

[5] During the course of the research such co-operation, as evidenced through hot-links, became more common as the distilleries improved their own web resources. In 1997 only Laphroaig had any substantial content and was the first distillery to link with the *Ileach*. Others have subsequently followed suite. Laphroaig's manager had originally agreed to be interviewed but was unexpectedly called to the mainland during both of my visits to Islay.

[6] Only two of the four teleworkers were interviewed (Brian and Dave). The third was unavailable on the occasion of both of my visits to the island; I only discovered the existence of the fourth following the conclusion of my fieldwork.

[7] Jura Stores' site, which has been running since mid-1997, makes an especially resourceful offer, stating that 'if you wish to visit our Island and do not want to bring groceries etc., with you, just telephone or e-mail us with a list of items required and your expected arrival date and we will ensure that they are delivered to your chosen accommodation ready for your arrival'.

[8] Most of Jura's funding is channelled through the department of agriculture in addition to specific grants made available for its environmentally sensitive areas.

[9] A plan of renovation has been drawn up for the old Free Church, which has been idle and derelict for many years. The purpose of the building would be 'to accommodate historical, natural history and also contemporary exhibitions. It is also hoped that it could encourage and become a centre for learning Gaelic on the island' (Jura Development Trust, 1998, 2). The Trust also proposes that a substantial copy archive, both on paper and computer disc, can be built up, drawing both on island sources and on various institutions such as the National Records Office and stipulates that the computer facility should be capable of Internet access. The capital budget for the conversion is estimated at £100,000 by the trust, of which only £10,000 had been raised at the time of writing. The Trust's on-line account of the development plan notes that 'an American family whose ancestors came from Jura, are considering giving a donation' before concluding as follows:

> There is no doubt that there are a very large number of people who are interested in their origins in particular and the kind of life their forbears lived... Recruiting these people, whether they visit the island or the island web-site, can only strengthen the fabric of island society and its economy. Thereby benefiting those of us who live on the island, those who visit on a regular basis and all who have a lasting interest in this unique place. I hope that you will consider assisting us and look forward to giving you further information in the future. Please email us if you are interested in supporting this venture. (Jura Development Trust, 1998, 4)

[10] This is an entirely voluntary organisation, whose members are all accommodation providers, service providers, shops or tourism businesses throughout Kintyre & Gigha. The Group was runner-up in the Thistle Awards for 1997, nominated for the 'Area Tourism Initiative Award'.

[11] The latest edition of the AIE skills register (see note 1, above) does, in fact, now list a solitary web designer based in Campbeltown.

[12] Much further North in Oban and Lochgilphead, and thus beyond the confines of Kintyre, there are two successful start-up firms specialising in web design but they lie beyond the case study margins. *Argyll-online* is a 'one-stop resource' that covers the region but is based in Inellan, close to Glasgow. It receives no public funding but survives through funding from local businesses as in-kind support for their web presence.

[13] The decision to designate Kintyre a target area for ICT development was taken by the director of AIE, not by the IT officer in isolation. Such priority areas can vary from year-to-year. Melody (AIE)

explains that many applications for assistance are received from Oban which have to be rejected simply because it 'comes out quite well' in terms of economic measures such as long-term unemployment and numbers of new business start-ups, two key measures used by HIE and its daughter companies.

[14] Refer back to Chapter 3 for an examination of the ways in which the concerns of the actors spoken to were allowed to inform the theoretical development of the study.

[15] The software company, Kildrummy, was founded in 1993 in an isolated bungalow 25 miles from Lerwick, the principal town. Recently the firm has been forced to relocate to Lerwick. Its director, Ken Beer explained in an interview to *The Guardian* (1997)'Frankly, we are succeeding in spite of the telecommunications technology that we have at our disposal. As the world divides into those who are data rich and those who are data poor, we are in danger of being stuck as the data poor. I'm moving the business from this beautiful spot here into Lerwick. It's a 25-mile drive, a complete pain, but the company is now so big that I have to link the administration and computing in Shetland with the sales and marketing in London. I can't do that on the technology we have here.' Kildrummy's difficulty is that the expectation placed by clients upon desktop efficiency cannot be matched by the existing infrastructure. Relocation to an area with greater bandwidth has thus become a necessity. The 'annihilation of space by time' - as Harvey (1989) phrased it - is clearly never absolute. All technologies are relative to others in their effects.

Chapter 5

'Electronic Islay': responding to the opportunities of the information age

Chapter outline

Key ICT initiatives on the island of Islay since the late-1980s are examined. Drawing on the work of Latour and Callon, the processes of 'enrolment' and 'alignment' are studied in relation to the involvement of local actors with the Community Teleservice Centre (CTC) project, originally funded by the Highlands and Islands Development Board. The chapter also begins to critically examine the degree to which local networks have been effectively articulated with external circuits of production and consumption and to ask how such outcomes have been negotiated. In particular, it is argued that different actors have conceptualised local needs in different ways, investing technology with differing meanings as a consequence. Using Islay as an example, it is argued that until interpretative flexibility lessens, local attempts to respond rapidly and effectively to the opportunities of the 'information age' may be retarded.

5.1 Telecottages: an applied exercise in rural 'problem-solving'

> What is a telecottage? I've heard of it, there was one 5 years ago on the other side of the water there ... it seemed terribly airy-fairy, nothing you could pin down. *Hugh*

In 1988 the Highlands and Islands Development Board (HIDB) invited the Islay and Jura Council for Voluntary Service (I&JCVS) to tender a proposal for the funding of a pilot telecottage project. Following the success of similar projects in Scandinavia, HIDB were keen to explore the possibilities of teleworking in remoter areas of Scotland (Qvortrup, 1993). A telecottage is a shared-facility centre where employees of different companies, independent freelance professionals or small businesses unable to afford such facilities on their own can gain access to ICT. The very first telecottages, providing distance learning facilities, computer supported public services, village halls facilities and sometimes stations for telework, were built in Denmark and Sweden in 1985. During the years 1985-1990 the idea spread rapidly to neighbouring countries such as Norway, Denmark and Finland (Qvortrup, 1993).

Spurred on by such Scandinavian success stories, HIDB launched its own telecottage programme at the end of the 1980s in partnership with a variety of community organisations and British Telecom. Funding was announced for a small handful of Community Teleservice Centres (CTCs) throughout the entire Highlands and Islands region. Selection depended firstly upon reasonable applications being put forward by local groups on the basis of voluntary effort and secondly upon the sites encompassing a decent degree of geographical diversity. HIDB aimed to include a range of types of rural communities in the CTC pilot project and Islay, with a population of nearly 4,000, suited the definition of a typical 'large island' [1]. I&JCVS were successful in their application and the village of Bowmore was designated as one of six CTC sites along with Hoy, Uist, Mid-Argyll (Whitehouse), Kirkwall and Benbecula[2].

The CTC initiative may be interpreted as a speculative attempt by a loose alliance of local and regional actors, led by HIDB, to harness and develop a local cache of skills that might potentially be articulated with external circuits of production and consumption. However, from the outset there was no clear consensus of opinion among these actors on exactly how ICT would be utilised within the proposed framework, merely a hope that a broad range of opportunities might be discernible once the necessary resources were available *in situ*. For instance, existing businesses might be able to develop their knowledge of spreadsheets and data-processing software packages thereby enhancing local productivity and competitiveness. Alternatively, each CTC might serve to encourage the development of a core of indigenous 'teleworkers', or else act as a magnet, attracting a new wave of computer literate incomers.

In the case of the Bowmore CTC, the actors who were involved in the consultation process - and who were to be instrumental in its day-to-day running - had conflicting ideas from the outset about its best purpose, reflecting their own beliefs and institutional goals. 'Connectivity' was envisaged differently by different agencies and tensions were evident from the start. It will be shown that these tensions relate fundamentally to the enterprise of rural 'problem-solving' and that they are still present in more recent proposals for island development utilising ICT.

5.2 Establishing the needs of Islay

The CTC - a technology comprising of rented premises, ICT equipment and a small complement of staff - was finally designated as a stand-alone enterprise with a guaranteed grant-maintained income of almost £50,000 for the first year of trading only. Funding would be entirely withdrawn in the third year, beyond which point the CTC should be financially independent. HIDB suggested that the objectives of the enterprise should be[3]:

- To provide access to shared facilities such as fax, online services, DTP and even photocopying, either on a 'laundry' or 'launderette' basis.
- To provide a site for teleworking.
- To raise awareness of the availability and uses of advanced telecommunications.
- To provide training for local people.

It is worth noting that the suffix 'for what purpose?' can be appended to each of the above statements. In this sense it truly was a pilot project, exploring all of the possible uses that might be made of ICT in a rural community. Yet with no clear idea of what services might be valued, and by whom, any financial projections - and these were insisted upon by HIDB - were clearly of dubious value, weakening the argument that the operation of the CTC must be financially self-sustaining. Why was this model chosen and not others? There are many ways in which local government could attempt to foster technical development in rural areas other than by providing a physically realised, commercially-driven telecottage. What kind of processes favoured this outcome in particular?

By the late-1980s Islay's community had already had some small-scale experience of computer and media technologies. Substantial use was being made of a fax machine already provided by HIDB, while Islay's community newspaper, the *Ileach*, had long been offering photocopying services. For Anne, the head of I&JCVS, a clear precedent had already been set by these previous encounters with technology. Local businesses frequently proceeded to buy their own equipment once they had 'learned the benefits'.

> We had a community newspaper, we had a community press and we had a fax machine which the HIDB had given us to see if people really would make use of a fax machine... It was the first one on Islay and we advertised it as a resource and people came flowing through the doors to use it and to try it. And that was successful in that people learned the benefits of a fax machine and went out and bought their own *and that's what HIDB wanted us to do. Anne* (I&JCVS, emphasis added)

Anne suggests that previously – in the case of the fax machine, for instance – HIDB and I&JCVS had jointly favoured a subsidised strategy orientated specifically towards assisting existing businesses to gain technical expertise. Such close inter-agency alignment was now lacking, with HIDB wanting to establish a self-supporting hi-tech start-up in Bowmore.

The CTCs were to operate as commercial enterprises, not as a subsidised part of local 'infrastructure' which would have been I&JCVS' preferred outcome. The insistence that dedicated services should be provided at a fixed site stemmed from the perceived success of the Scandinavian model, while the insistence on profitability reflected the fact that publicly-sponsored initiatives were under mounting pressure in the late-1980s to demonstrate to central government that they could operate without financial loss. The institutional replacement of the Highlands and Islands Development Board (HIDB) with Highlands and Islands Enterprise (HIE), which occurred shortly afterwards, was symptomatic of the new hegemony of 'enterprise culture'. It was, therefore, made clear from the outset to the islanders that grant-assisted aid from HIDB would fall to £5,000 in the second year, beyond which point the CTC was expected to become entirely self-funded through charges levied for the use of its premises upon local businesses.

Despite their social remit, HIDB had a noted tendency to prioritise economic performance in the region during the 1980s (McKinnon, 1998). For the first time the agency was under considerable pressure to link aid with performance targets measured in terms of successful business start-ups – a practice that still continues today for the local enterprise companies. In this instance, HIDB made the choice to foster a new enterprise that might hopefully secure a favourable niche for itself in regional and national divisions of labour. Its secondary purpose could then be to serve as the core of a local multiplier effect that might stimulate similar initiatives.

In contrast, I&JCVS had envisaged a community-run resource which would exist wholly for this latter purpose, service existing businesses on the island first and foremost, fostering their understanding of what desk-top applications might strengthen

and support their endeavours. It was envisaged that this would span all sectors of the economy from tourism to farming. Self-employed individuals or small businesses could explore different programmes and packages at the CTC, paying a nominal charge for the time they spent learning to use the equipment.

> And that's actually one of the areas of conflict that we were in with HIDB at the time, because we saw this as doing more of a social service in the community than we saw the commercial side of it. So we always thought that it would need subsidy from HIDB or whoever and it's one of the areas that I know that we fell out with the HIDB over... The whole object of the exercise really was to get the community through the door to learn about computers so they could go home and set themselves up. *Anne* (I&JCVS)

It was hoped that in time the CTC might inspire a core of 'indigenous' professionally salaried teleworkers to develop on the island whose efforts might redress one long-standing problem on Islay, namely the genuine lack of earning opportunity. Again, I&JCVS saw the CTC as a way for young islanders to learn for themselves by observation, rather than as a product requiring customers in perpetuity.

> It was about decreasing disadvantage because of where you lived ... That was part of the point of starting up the telecottage, it *was to try and encourage people working from home*, to try and encourage a core of teleworkers... We struggled with HIDB over that and they really weren't happy about our proposals for, you know, our business plan because of the social side of things. But we just stuck to our guns on it and said, you know, we could be drawing young people through the door who want to know a little bit more about technology in terms of setting themselves up in business or strengthening the opportunities for getting their first job.
> *Anne* (I&JCVS, emphasis added)

HIDB over-ruled many aspects of the plan that was submitted to them by I&JCVS as part of their public consultation exercise. These related both to the purposes that the CTC might usefully achieve and to its organisational structure. Initially, Anne had wanted to see the CTC functioning within the existing highly subsidised I&JCVS-*Ileach* organisational structure. HIDB insisted that this posed too much of a risk to the parent company, given their insistence that the CTC should be financially accountable. Separate premises and staff were secured, although this meant that the *Ileach* actually now faced competition over services such as photocopying which it had been conducting for some time.

Ultimately, it was HIDB's interpretation of both local problems and their preferred solutions that was adopted as a framework for action, simply by virtue of their control of the purse-strings. However, Anne's narrative suggests that local actors never genuinely accepted HIDB's model as the correct way to proceed. Following Callon's

(1986) example, this was the critical moment of *interessement*, the moment of translation when HIDB needed to successfully persuade I&JCVS that theirs was the correct position. However, all of those interviewed from the island community with an involvement with the administration of the CTC make it clear that they were never in agreement with the basic principles that lay behind it. They proceeded with the expectation of failure, as related to the financial goals that HIDB had established. They continued to uphold the belief that any ICT initiative need not make a profit as long as it contributes in some broader way to local economic and social development. This same tension between models of public finance and private enterprise lies at the heart of contemporary debates on local governance, especially in relation to Private Finance Initiative models of funding (Cohen, 1999).

Modelling networks

Two contrasting networks are evident here, following the arguments of Bijker (1995a, 1995b) and Callon (1986) that technical development is, in part, a problem-solving exercise. The starting point for Callon, in understanding the growth of networks of humans and nonhumans, is the moment of *problematisation*. As different actors problematise certain aspects of life on Islay in different ways - revealing vying notions of rurality which relate to perceptions of economy, polity, community and remoteness -conflict arises with regard to the most suitable mode of technical development. HIDB failed at the outset, quite clearly, to successfully make a convincing case to the digerati of Islay. Latour and Callon's insistence that nonhumans are conceptualised as *actors* in network analysis helps to illuminate the fundamental discrepancy that lay between two different ways of thinking.

- HIDB viewed the CTC as an actor that would, in time, become a network. That is to say, the CTC - an assemblage of leased premises, new technologies and staff - might begin to enrol the local community as users of its services. In time this network might be extended beyond the island as work contracts and access to services might both be procured through the use of ICT. A web of consumption and production relationships might become stabilised around one leading actor - the CTC itself. However, for this model to succeed the CTC had to become financially self-supporting beyond the initial period of subsidy. At that point

HIDB would re-align its position within the network, possibly withdrawing entirely to leave behind a stable and durable artefact with a clearly understood purpose. Locality – in this case, the island of Islay itself - is largely irrelevant in this conceptualisation. HIDB could have sited its pilot CTCs anywhere and sought similar results.

- For I&JCVS the primary frame of reference was always Islay. The locality itself was viewed as an existing network within which a grant-maintained CTC could play a positive role by stimulating widespread uptake and use of new technologies on the island. Youngsters might find a reason to stay, new teleworking migrants might arrive and any sense of deprivation or marginality would certainly be redressed through access to new services. HIDB would also remain an actor within this network, continuing to subsidise the CTC for as long as necessary. This need not be problematic given that it is a state agency that is ostensibly responsible for promoting economic and social development and would therefore be acting true-to-form. In time, in this conceptualisation, the CTC might become redundant like the fax machine before it; if local businesses procured their own equipment, it would no longer have a viable role in Islay, but a useful goal would have been met nonetheless. Islay itself – viewed at the outset as a threatened network of people, peat and existing production and consumption relationships – would, by now, have benefited in myriad ways from the stabilising influence of this temporary visitor to its shores.

5.3 The Bowmore CTC, 1991-93

The CTC functioned for three years until its period of funding ended. In a study commissioned by HIE, Bryden, Black and Rennie (1993) report that during this period 60% of use was by the business and voluntary sector, with tourism and services accounting for the majority of business users. On average only 1 fax was sent per day for clients (most businesses already had their own fax machine), while about 30,000 pages of photocopying were provided each year. Attempts were made to provide training but they faced competition from subsidised courses being run by the Scottish Training Foundation. Overall, use was made of the services provided, but not to the

		1991-2		1992-3	
		IBEX projection	**Out-turn**	**IBEX projection**	**Out-turn**
Expenditure (£)	Capital	19,350	19,407	8,195	100
	Revenue	33.313	31,944	28,875	28,849
	Total	*52,663*	*51,351*	*37,070*	*28,949*
Income (£)	HIDB/IE	29,263	31,314	4,499	5,999
	BT	20,000	20,000	0	0
	Own income	3,400	10,129	32,571	14,051
	Total	*52,663*	*61,443*	*37,070*	*20,050*
Net income	(outgoings)	**0**	**+10,092**	**0**	**-8,899**

Table 5.1 Financial projections compared with out-turns for the CTC, 1991-393
Source: adapted from Bryden *et al.*, 1993, 18

extent that the CTC could become self-sustaining, and income fell far short of the projections made for the final year of trading (Table 5.1). Over 70% of clients were aged 25-44, just over half of whom were female.

Entering its third year with a net positive balance of only £1,193, the Islay CTC was significantly restructured, with staff numbers cut from 5 to 2. Unable to survive independently, it finally became amalgamated with the *Ileach* printing and publishing service of I&JCVS. This merger was advocated on the grounds of cost-saving and 'avoiding wasteful duplication and even rivalry' (Bryden *et al.*, 1993, 19). In the year ending 31 March 1992, the *Ileach* had a gross income of £50,787 but made a loss of around £5,000 after repayment of loans, capital and interest. However, as a non-profit organisation these losses are ultimately sustained by the Scottish Office, parent to Scottish CVS. The merged company has continued on this basis, offering services such as printing, photocopying, fax and computer use. This income is added to that obtained from newspaper subscriptions.

Ileach Teleservices – as it is now known - therefore remains foremost a community enterprise. It has, as Bryden *et al.* (1993, 25) note, 'in effect reverted closer to the structure preferred by its originators, which was for a project within the I&JCVS/*Ileach* organisation'.[4] This reversion stems from a number of pressures, principally the lack of income. Anne believes that the HIDB plan was 'too ambitious' and that, without sufficient marketing and promotion, community uptake of the services was very low, particularly at time when very few people had actually heard of email or the Internet.

	1992	1993
One A4 photocopy	10p	12p
Fax (one sheet, sent in UK)	£1.00	£1.50
Desk Top Publishing design charges per hour	£8.00	£8.00
Word processing text input charges per hour	£8.00	£8.00

Table 5.2 Customer charges for the Bowmore CTC, 1992-93
Source: Bryden *et al.*, 1993

Bryden *et al.* (1993) offer several additional explanations for the Bowmore CTC's failure to succeed in the form originally envisaged which are especially pertinent to Islay. Firstly, they argue that because the Community Teleservice Centre pilot scheme started before the transition from HIDB to HIE and its local network, it was sometimes regarded by the Local Enterprise Councils as 'HIE's project', and not fully supported at the local level. Secondly, they note that the 'stand-alone' model which was rigidly adhered to by HIDB led to local competition with the *Ileach,* which was already offering the photocopying and fax services which constituted a large part of daily revenue for all six Scottish CTCs.

Thirdly, there were difficulties with staffing. The first HIDB-appointed manager was a 'skilled and narrowly focused technical expert' according to Bryden *et al.* (1993). The Islay CTC was 'technology led' in its first year and this led to 'a failure to identify and pursue realistic targets and to develop good relations with the local community including small enterprises and voluntary organisations' (*ibid.*, 13). Amongst the participants themselves, issues of business acumen are most frequently offered as an explanation of why the CTC failed to stabilise in the long-term. Both Anne and Dave (who is now a teleworker but previously served as the second manager at Bowmore) recognise that a lack of commercial flair prevented the CTC from succeeding in accordance with the final business plan approved by HIDB.

> We didn't have the expertise to do some of the business planning we could have done... We were trying to use local staff, local expertise, but we discovered we just didn't have enough of it to expand *the way the business plan said we would do.*
> *Anne* (I&JCVS, emphasis added)

> It failed because it hadn't got anybody in it who had any commercial experience... And they couldn't understand the importance of it, and thought that all money would come from grants, always. And it just went into nothing... I mean, money was being spent, the computers were bought but there was just, there's a certain kind of flair or energy to do with the commercial world which was totally lacking, and they couldn't understand... they didn't understand the nature of what they were trying to create.
> *Dave*

With this last comment Dave neatly encapsulates the key issue here, which continues to be indeterminate and conflicting goals for the provision of ICT on Islay. Never having been fully convinced by HIDB's vision, members of staff were happy to run the CTC without much of a view to profit. Indeed, if the expectation of failure was there from the beginning on the part of certain actors then the fate of the CTC, once again, is shown to be a secondary concern to actors whose primary frame of reference is Islay itself. The CTC's purpose can be likened to the essential yet dispensable role played by Saturn rockets in assisting lunar modules to escape earth's gravity.

Dave, like Anne, argues that while the lack of commercial expertise ultimately caused the downfall of the CTC, new technologies should not, in the first instance, have been introduced to Islay in the guise of a profit-making enterprise. The charges made for services (Table 5.2) were, in his view, prohibitively expensive given Islay's low-wage economy. From the outset Dave believed that resources could have been deployed in a more suitable way which would have brought more lasting benefits to the island.

> I wanted to provide it as a service on the island at virtually no cost to the user because that would enable people to actually start off businesses and develop teleworking or a teleworking job. You wouldn't expect them to carry on doing that because they would buy their own computer systems which we would hope to encourage them to do.
> *Dave*

In this sense Dave admits that he never envisaged the CTC surviving as an entity in the manner HIDB intended, displaying a deeper sympathy with the 'Saturn rocket' model of technical development. Here he aligns himself with Anne, although he criticises those who were subsequently involved with the running of the CTC for not making any real effort to actually follow HIDB's business plan. He believes that it was wrong for others to assume an attitude of indifference towards its more commercial aspects, once HIDB's proposed course of action was actually being funded and followed. Deeply concerned for the future of Islay's threatened community, Dave believes, like Anne, that ICT should have been provided 'at virtually no cost to the user'. However, he is also quick to distance himself from people who lack 'the flair or energy of the commercial world' to which he once

belonged, reflecting his background in London commerce (he relocated to Islay in 1974).

External connectivity

ICT may allow a locality to become 'inserted' into wider regional and national networks of production and consumption in different ways. Teleworking incomers, lured by superior infrastructure, may bring their own client and supply networks with them. Alternatively, ICT provides new means to promote the island as a site of consumption through electronic media, potentially increasing tourist revenues. Crucially, ICT may then provide local youth with new incentives to remain in a remote locale such as Islay. This can be achieved directly, with ICT offering hi-tech start-up opportunities for more enterprising members of the community, or indirectly through multipliers occurring in the tourist trade.

In the case of Islay, Bryden *et al.* (1993, 14) note that external markets beyond the immediate sphere of influence of the pilot CTCs and their support networks proved more difficult to develop than had originally been envisaged in all respects. They conclude that 'if the development of export based teleworking in remote locations is to become a significant reality then CTCs may need to associate together to develop these markets'. They may need assistance to do so, which 'would not seem to be incompatible with the aims and objectives of HIE and the LEC network' (*ibid.*, 15). As originally envisaged, the CTCs were supposed to support one another through the electronic medium of RURTEL[5]. If one area had expertise in an area such as spread-sheets, they might collaborate with another CTC that had expertise in graphic design. In practice this did not often happen. Brian, who works at *Ileach* Teleservices, likens such intentions to communism, noting that it is 'great in theory but not so great when you put it into practice'.

> I don't think really that the infrastructure to do it properly was ever there and I get the feeling that there was a lot of competition as in 'Okay, Hoy might be better at graphics than we are but I'm damned if we're going to admit that. We're not going to send business out to them, we'll just do that here'. I know there was some of that went on. *Brian*

The CTC staff clearly continued to follow their own beliefs in relation to the most effective model of community development, often contrary to HIDB's business plan; they did not follow the roles ascribed to them by the leading actor. Little business

acumen was evident amongst the staff, but this is not shown to have been a concern *at the time* by Anne; it is merely a *de facto* explanation that is offered after the event. Some actors suggest that the 'Saturn rocket' philosophy is endemic to state-supported initiatives in the region, and not merely to the CTC project.

> The things that have been set up purely with public money, as soon as the public money has gone they tend to peter out. *Melody* (AIE)
>
> As I understood it at the time [of the CTC] *you had to prove you weren't making money* and they had to give out the grant for the next quarter until you came to the last part of the two years. *Brian* (emphasis added)

It was not just the staff, but also the technical equipment that acted in ways that HIDB had not anticipated. The technology itself quickly ceased to be state-of-the-art and, as prices fell thereby making desk-top sets more affordable for individual small businesses, it quickly ceased to be a 'high-order service' for some members of the local community. 'Dissidence', as Callon terms it, was thus exhibited by nonhuman as well as human elements of the network. The capacity for ICT to 'betray' in this way was not anticipated by HIDB (although it was, of course, an outcome actively sought by I&JCVS in their original proposal).

A network only becomes truly mobilised once successful enrolment has begun. This network floundered at the stage of enrolment on several counts. The lead actor - in this case HIDB - had attempted to construct a network around the CTC, as outlined above, which would function to link islanders and off-islanders through a series of (largely unspecified) production-consumption relationships. The primary purpose of the pilot project was to identify these relationships and then hopefully to utilise them in a way which would financially sustain the CTC. Such enrolment proved to be problematic because of widespread failure of both human and nonhuman actors to subscribe to the roles ascribed to them by HIDB.

The need for heterogeneous engineers who can manage such networks and are equally at home in technical, political, economic and social domains is a recurring theme in Technology Studies (Hughes, 1983, 1986). The lack of a leading actor who could perform this role is recognised, belatedly by Bryden *et al.* (1993, 11) when they suggest that 'generalists with community skills and good local networks' should be looked to as 'the best managers' for any future CTC projects. They continue that 'it is important to note that in most remote communities there is no real distinction between

those involved in community and voluntary activities and those involved in business' (*ibid.*, 25). Social and economic domains often defy compartmentalisation in remote rural environments and local actors were far less interested in contributing to a regional network of profitably operating CTCs than they were in maintaining the primacy of Islay as a network-in-itself. This is clearly conveyed in the following extract where Dave explains that he and the CTC's first manager had contrasting views about the primacy of Islay, and not the CTC itself, as the focal point for local action.

> He was a very clever guy but Islay, to him, was a good view out the window... *he never actually wanted to be part of the island.* He wanted to remain separate and I don't think that's successful and ultimately he didn't and he moved off the island. He had a dream of bringing hundreds of teleworkers here. When we tried to sell bringing a telecentre to Islay I said 'for goodness sake don't push that, push it as an opportunity for youngsters from the island to stay on the island'... But he wasn't interested in it from that side, he was interested in the imported people only, which made it very unpopular. *Dave* (emphasis added)

An important issue is raised here which is explored in greater depth in later chapters, namely the means by which local connectivity with external flows of production and consumption is best achieved. In particular, the role of teleworkers (see Chapter 7) as vital conduits for the conveyance of such flows will be examined. As Chapter 9 will argue, the presence of a cache of skilled individuals who experience heightened connectivity through the use of ICT may not, in itself, necessarily justify talk of an 'empowered' locale.

5.4 *Ileach* Teleservices

> I heard a wonderful story... Dorothy, who's the editor of the *Ileach*, one Friday this woman came in to see her, and she says 'I was in the States recently visiting my daughter who works as a nanny for this American lawyer'. And she says that one morning the lawyer comes into her room and says 'there you are, there's something from home that'll brighten you up'. And she says 'he gave me this', and she hands us a sheaf of paper and it's the *Ileach,* printed from the web site, and she says 'how the heck did that get there? How did he get the *Ileach* off his computer?'. And Dorothy says 'well, Brian put it there!' *Brian*

Islay's CTC did not 'fail' outright, as Bryden *et al.* (1993) note[6]. In 1993, unable to maintain premises and the staff complement that was required to meet the range of services that had originally been envisaged, the equipment was taken to the *Ileach* premises. *Ileach* Teleservices, as it became known, initially provided simple fax and photocopying services. The more ambitious aims - to provide a centre for a core of

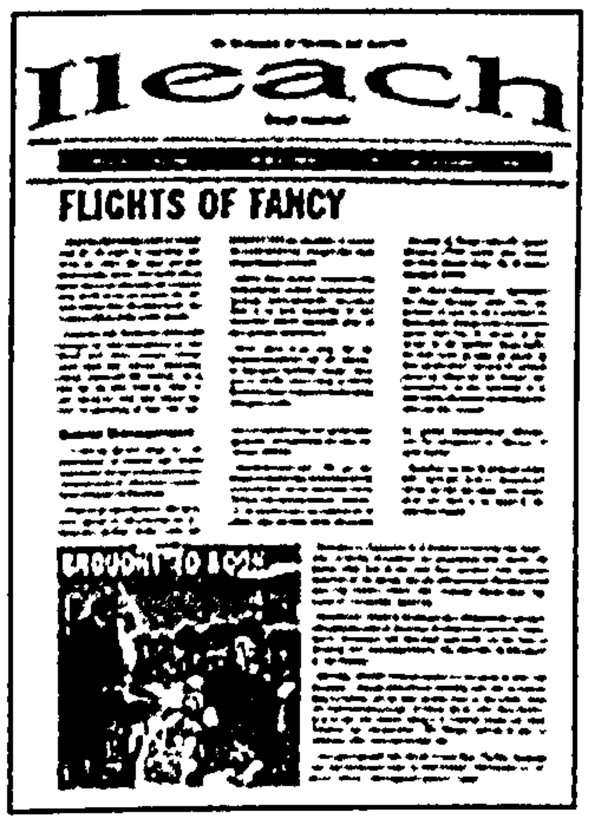

Ileach
FLIGHTS OF FANCY

Figure 5.1 The *Ileach* newspaper on-line
(at http://www.ileach.co.uk)

teleworkers - were abandoned. 'It was about reducing staff and offering a very basic service,' explains Anne, 'and the training element has more or less disappeared. The external markets have certainly not been marketed since the start'.

Since 1996, however, *Ileach* teleservices has begun to re-position itself as a centre for e-commerce, thanks largely to the efforts of a new member of staff, Brian, and the provision of a £28,000 grant for updated computer hardware and software from the Lotteries Commission. While the actors closely involved with the original CTC have been active elsewhere (Dave has been building his own teleworking business while Anne has continued to seek new sources of funding for new initiatives on the island), Brian has pioneered innovative new uses of ICT for Islay. Exploring the possibilities of e-commerce, he has been using the equipment at his disposal to promote the island as a tourist destination on the Internet. Only one other islander, (who could not be interviewed) has also operated in this field, and latterly many of his clients have defected to Brian, including the Islay Marketing Group, a group of small local businesses who have a virtual 'marketplace' which is maintained by Brian.

Brian, a Glaswegian who migrated to Islay in the mid-1980s, originally came to the *Ileach* in September 1996 and is responsible for the paper's on-line presence. The *Ileach* was the first community newspaper in the UK to be available in this way[7], commencing at the end of 1996 (Figure 5.1). The on-line edition now serves as a focal point for island businesses to gain a presence on the Internet. Under existing charge structures individuals or small businesses can have their own web-page designed and up-loaded by Brian, for which they are charged £50 per annum.

Brian's efforts have been very successful and it is clear that other members of the community regard him as one of the island's leading actors, responsible for charting Islay's collective journey into cyberspace. Islay is still a network in this formulation, but *Ileach* teleservices - comprising Brian and ICT - is increasingly regarded as a lead actor by others in the community. The Lochside Hotel has informed him that they have been receiving their best bookings for 10 years since he finished their web site.

During the course of three interviews, each six months apart, Brian went on to design and up-load web sites for most of the major hotels on Islay.

However, Brian professes his reluctance in accepting the role of 'local expert'. He asserts that 'I'm not going to go around evangelising it [ICT] and try to force people into it', adding that 'I'm not the computer whizz-kid as everyone seems to think'. However, as he describes his day-to-day experiences on the Islay it becomes apparent that he actually does devote a great deal of time to exploring and implementing new web-based initiatives on behalf of the community. 'It's me that pushed it,' he later admits.

Brian actively seeks to maximise the number of hotlinks that are provided by the *Ileach* web site[8]. He has linked with all of the on-line distilleries as well as to numerous regional and national-level Web resources such as the Project Ossian site for Scottish tourism (see section 3.3.2), explaining that 'I'm always looking around for bits and pieces and if I can find somewhere I'll e-mail them and say look is there any chance you can put a link on your web site to ours and vice-versa'. He has also made forays into areas of local commerce outside of tourism, in one instance approaching a firm in Campbeltown who deal with most of the property for sale on the island and who already place adverts in the printed version of the *Ileach*. Anticpating that a potentially global audience can view these properties online, and that this might attract more incomers and help redress population loss on the island, he has offered to place all their adverts on the web site for a nominal fee of £5 each, an invitation the company had yet to take up at the time of the last interview. Always modest, he describes his contribution to Islay in terms of a simple multiplier effect, suggesting that as local businesses and suppliers get used to seeing email and internet addresses appearing in a local context then 'it'll sort of tier down - they'll all be thinking "I don't have that!"' He is, therefore, following exactly the same strategy for the island that Anne and Dave originally proposed wherein local businesses, learning from others by example, willingly adopt technology-led working practices that grant access to more extensive markets.

Resisting the problematisation of Islay

Quite notably, Brian tries to resist making the problematisation of island life a starting-point for action, eschewing the language of problems and solutions that, as

previous chapters have illustrated, so often derives from a technological frame that draws upon notions of deprivation and marginality.

> But there's definitely a requirement for, in terms of e-mails and stuff I've had through from people, what's available, you know, 'if we come over can we hire fishing equipment, do we need to bring our own stuff, can we hire bikes?'. If we put a directory up they can check that out in the first place... And it doesn't take a great deal of work to set that up. *Brian*

At other times, however, a deeper motivation is discernible. He is acting to buttress community interests on Islay, inferring that there are, indeed, problems requiring solutions. His own proposed solution is to establish Islay as a more significant node within the flows of informationalism, increasing the island's external connectivity and, critically, its *visibility*. Personal gain does not figure in this schematic.

> We're not really out to make a killing ... The idea generally is to try and bring Islay more on the map so that people are aware of it and people will come over here on holiday and stuff like that. This is because it's a community business, it's like a non-profit making business and anything we've got in the way of profits goes back into the business again... I don't get a company car at the end of it. *Brian*

However, while claiming not to be interested in 'making a killing', Brian frequently voices complaints that the *Ileach's* services are under-priced, complaining that 'over here you cannot charge what the work is actually worth'. There is ambiguity here, calling to mind Star's (1991) account of the ways in which individuals often only partially 'sign-on' to networks. Brian is keen to avoid signing-on to a 'clientilistic' conception of Islay, to use the terminology developed by Marsden *et al.* (1993). He constantly qualifies his remarks in ways that suggest the interventions that he is making on behalf of Islay are not strictly necessary, frequently attempting to cloak his work with the rhetoric of self-interest. At one point, Brian asserts that 'we are trying to sell Islay because the more people that come over here probably the more people are going to buy this [the *Ileach*] when they're over so I try and justify it that way'. This need to 'justify' his work in alternative ways stems from a reluctance to subscribe to externally constructed notions of rural deprivation as a technological frame for action. Ways in which rurality can be understood as a technological frame for socio-techical interaction are discussed further in Chapter 9.

5.5 The branding of 'Electronic Islay'

While *Ileach* Teleservices has secured a degree of obduracy, Anne has been actively pursuing her original vision of community development and ICT still figures prominently within the latest plans. In 1998 she helped formulate the most ambitious 'strategy' for the island yet which has involved forty-two actors, including NGOs, local businesses and local government agencies, establishing the Islay Development Company[9] (IDC), a community-led Local Rural Partnership. The Corrum Trust (see Glossary) were instrumental in securing direct funding for the IDC from the Scottish Office.

The IDC manifesto, published in 1998, is entitled *Action for Islay (Adhartas do Ile)*[10]. The heading at the top of the very first page is 'Islay - the challenge', followed by a summary of recent downward trends in population. An inset box entitled 'problems' accompanies this. Problematisation of Islay, then, remains the starting point for this latest round of local development initiatives and the problems, as perceived by the IDC, are as follows:

- Decline in population.
- Decline in agriculture and manufacturing and the knock-on effect on other sectors.
- An associated decline in opportunities for young people and an increasing trend for them to leave the island.
- The existence of above-average long-term unemployment.
- Lack of co-ordination and integrated promotion and development of the island's unique assets.

Following this statement, a clearly defined framework for action is presented, which is couched throughout in terms of 'inclusivity' and sustainability:

> The company's aim is to promote and develop social, economic and environmental projects that contribute to the regeneration of Islay, through the implementation of an agreed sustainable development strategy. This will be achieved by creating a working partnership of community, organisations and activities in order to maximise the benefit to the island and to ensure an integrated approach to development by:
> - Collectively agreeing and implementing a programme for immediate action
> - Co-ordinating the services and resources of its partners

> • Attracting resources for the company to enable it to carry out its programme (Islay Development Company, 1998, 4)

The agencies subsumed under the IDC have agreed on seven 'project areas' in conjunction with an eighth, over-arching programme, entitled 'Islay the Brand'. 'Communications and Information Technology' is one of these project areas and three aims have been established:

- Project 1: to investigate the possibility of starting a small call centre on Islay.
- Project 2: to provide IT training for crofters and farmers (to improve record keeping and 'give them greater access to grants and assistance').
- Project 3: the development of a self-sustaining Islay Web database, which will help to improve 'the marketing of Islay'.

These themes were being rigorously pursued in September 1999 when Argyll & the Islands Enterprise collaborated with Argyll and Bute Community Education Department to bring the 'You can do IT on Islay and Jura' initiative to the two islands[11] at the annual Islay Show. The AIE-hosted seminar 'Doing Business in the Information Society' attempted to demonstrate the potential for island businesses to sell their products through the Internet, briefing them on e-commerce. Farmers and crofters were encouraged to visit the AIE office in Bowmore to inspect computer packages for keeping detailed livestock records required by the Government. A demonstration by the Scottish Agricultural College, with support from AIE's Leader II programme, also included business software, including accounts, and advice about how to access the Internet (*Aberdeen Press and Journal*, 1999c). All of these initiatives are, however, more generally integrated under the grander scheme of 'Islay the Brand' which is summarised as follows:

> The promotion of a strong, unified brand will increase the national and global awareness of the qualities of Islay. Increased visits and sales will result from improved qualities of products / services offered to customers, as the expectation of visitors rises. (Islay Development Company, 1998, 6)

In contrast to the earlier CTC, this initiative is subject to far less interpretative flexibility amongst local actors. The niche that Islay is expected to occupy in regional and national production-consumption relationships and accumulation strategies appears to be expressed succinctly and without internal contradiction. Islay is to be

understood as a site of consumption and the IDC will focus its efforts on ensuring that this is a role which is played out as efficiently and convincingly as possible. Consequently, all actors must strive to make a contribution to the 'uniqueness' of Islay.

> The company themselves prioritised this coming year to work on promoting and developing a marketing strategy for 'Islay the Brand' ... that's the cheeses, the whisky, the accommodation, the environment, everything that makes Islay unique and special. (*Ibid.*, 4)

For this to be achieved, all actors on the island – a category which, following the tenets of actor-network theory, includes the cheeses and the whisky - must perform in accordance with the strategy devised by the lead actors of the IDC. In a 1999 press release, the newly appointed manager of the company made the following statement which also promotes common cause amongst Islay's actors, championing their collective ability to present a consolidated local image in a global marketplace.

> Islay the Brand is all about the promotion of Islay, that is the place, the produce and the people. What we are hoping to encompass is produce, heritage, culture and environment. We are looking at the promotion of a strong overall image of the island, increasing international and global awareness of the quality of Islay. (*Aberdeen Press and Journal*, 1999b)

The proposed role of ICT is, it should be noted, not especially grand. The project areas cited - the voluntary assumption of 'back-office' status that is associated with call centres, the support of farming through a simple strategy of technical support and the marketing of Islay the Brand over the Internet - are all symptomatic of Marsden *et al.*'s (1993) definition of a 'clientelistic' area of the countryside. It is an approach to development which is often only reluctantly accepted by local agencies who must acknowledge concomitant risks of exploitation. Low wages and harsh working conditions are frequently associated with call centres, while the entire community must pander to the gaze of tourists on 'whisky' theme trips (stories of 'unfriendly' locals can do much to harm an area's tourist trade). Yet such eventualities are integral to meeting the IDC's avowed goal of creating 'an economically and socially sustainable island community'. As such, they might best be regarded as 'necessary evils', according to Anne, if Islay is to regain demographic and economic stability.

> It's all part of taking Islay forward to meet the vision for Islay which is about bringing people back home again, it's about increasing the population and reversing the population decline. *Anne*

All of this is, in many respects, quite contrary to the high expectations that were held in the late-1980s when ICT was envisaged as a 'high road' for development in the Highlands and Islands (section 3.3.2). It is also a hard-won outcome, following previous difficulties in aligning the interests of local actors. Further, in Anne's opinion, the sense of unity which currently exists is still precarious and she fears that 'there probably will be tensions around the kind of strategies, in terms of what the AIE sees could or should happen and what we think would be a more immediate and sustainable benefit here'. Lead actors such as Anne must now strive to fully mobilise the network and to ensure that meanings are fixed and understood by all participants.

Pre-empting closure

Despite the efforts made by actors such as Brian and Anne, any sense of closure – that is, of the lessening of interpretative flexibility marked by the stabilisation of the networks under construction – may yet prove be a precarious achievement on Islay. In the clientilistic countryside the local network remains vulnerable to the contingent actions of private sector interests and state agencies. This is inevitable given that the linkages that are sought with external funding partners may always be subject to some degree of reciprocity. In 1999, just prior to the completion of this study, evidence of such vulnerability came to light. Ten years after they first identified Islay as a test-bed for the CTC initiative, BT once again proclaimed high hopes for the island of Islay, substantially raising local expectations of what may be achievable through the use of ICT. 'Electronic Islay' is an initiative developed by BT Scotland which aims to regenerate the island through economic development, tourism and community initiatives and is intended, should it be successful, to act as a role model for all of Scotland's rural areas.

Choosing the island's annual social high-point - the Islay Show - as the venue to announce the latest set of proposals, BT Scotland stressed that ICT, deployed in a holistic way, would not only stimulate consumption of the islands' products but might revolutionise the provision of health and education services on the island, arresting further population decline. Emulating a model developed in New Brunswick in Canada, BT Scotland claims to have identified Islay as an ideal pilot location on account of several factors, including a dwindling population, the fishing trade dying

out and 'tourism not being used as well as it could be' (*Aberdeen Press and Journal*, 1999a).

Interviewed in the *Scotsman* (1999b, 20), a spokesman for BT Scotland claimed that:

> If we get the infrastructure right, business will come to Islay. We are looking at a detailed assessment of every area, from broadband access to satellite communications, from unemployment to health and education, to discover what benefits and opportunities the technology could bring to the island and, indeed, the entire nation.

A second spokesman added the following remark:

> Why should young people have to leave home, travel 400 miles and get into debt when their university classes can be transmitted online? I see a time when people will start moving back on to the islands to enjoy a beautiful, unique environment while technology affords them the same levels of access and connectivity they would have anywhere else in the world (*ibid.*, 20).

Currently, BT Scotland in still holding consultations with islanders while assessing the strengths of current vying ICT alternatives, such as further extension of the ISDN network, introducing ADSL or pursuing a third option consisting of running a fibre optic circuit into the North Sea oilfields and looping it through the islands at a cost of up to £50 million. How, when and in what form BT Scotland intends to pursue the project is therefore unclear given that it has also stressed that it has a business motive in running this pilot and that it will not act without the commitment of local financial partners. 'We are a business and not a charity, so we are not looking to simply dump a large amount of money into the area' said a spokesman (*ibid.*, 20)

While aspects of these new proposals articulate with the hard-won consensus of the Islay Development Company, particularly in relation to selling Islay the Brand, the re-introduction of such a powerful actor to the region as a motive force will undoubtedly have its effects. BT Scotland plans to work in partnership with HIE, United Distillers, Argyll and Bute Council and local business groups, all of whom will be expected to invest in the concept. These are the lead actors in the Islay Development Company whose alignment with its principal aims, as Anne suggests, may not yet be taken for granted. IDC may prove to be a temporary alliance at best, particularly if powerful new technical resources are introduced to the region, provoking new rounds of debate. Vying notions of community and profitability are, if history is any guide, certain to figure in any such debate.

5.6 Conclusion: re-asserting the primacy of the local area network

Since the original proposals for the CTC were tendered, both people and ICT have changed their role and function on several occasions. Three stages, or moments of translation, are discernible. The process began with the problematisation of Islay and the identification of ICT as a possible solution. Believing that they had persuaded other actors that theirs was the correct position – this is the moment of *interessement* – HIDB attempted to ascribe performative roles to ICT, the CTC staff, and to the wider population of Islay as consumers prior to establishing productive links with actors further afield and with the other pilot CTCs. However, continued re-negotiation of these roles on the part of many of the actors has eventually led to the establishment of *Ileach* Teleservices. Through trial and error, this has emerged as a lead actor with an important and popularly accepted role to play in stabilising the local area network of Islay. This is evident in the willingness with which hotels and small businesses, under the auspices of the local marketing group, seek advice and services from *Ileach* Teleservices.

Yet it has been a hard-won outcome, reflecting the marked interpretative flexibility of ICT when initially introduced to such a heavily problematised rural environment as the island of Islay. Grander ambitions for teleworking on the island have been scaled down and only a handful of such professionals currently operate from the island (see Chapter 7). Instead, it is now widely accepted that a basic call centre would be a better outcome for the island, providing much-needed employment for the less skilled and seasonally unemployed. Procurement of such a centre is a stated objective of the new Islay Development Trust. I&JCVS's original assertion of the local area network as the primary frame of reference for local action has, belatedly, begun to come into operation. Social and economic goals are inseparable within this network and ICT is envisaged as playing a simple, if essential, supporting role in the cast.

In contrast, HIDB (and latterly HIE), despite their social remit, promoted the CTC as a network-in-itself. Thoroughly interpellated into the hegemony of enterprise culture, the HIDB / BT vision of a 'wired' Western Isles region comprised a constellation of successful CTCs and not of places. The 1998 proposals of the Islay Development Company demonstrate that I&JCVS has belatedly re-asserted the importance of place through the strategy of 'Islay the Brand'. However, such a route

does require the wilful acceptance of a 'clientilistic' role within much wider national and international space-economies. This chapter has illustrated how, and why, this outcome has been arrived at in preference to other alternatives. The courses of action that are considered in different locations - and the ways in which rurality, understood as a technological frame, help to determine which choices are made – is a theme which is returned to in the concluding chapter.

Notes

[1] In contrast, Hoy, another of the successful candidates, was designated a 'small' island of 500 inhabitants.

[2] Five, rather than six, were originally planned. In fact, Kirkwall and Benbecula were not fully commercially orientated projects but were short-term initiatives based in local schools designed to test whether there was any local demand for IT services.

[3] These objectives are stated in Bryden *et al.* (1993) and are derived from a paper by John Watt, 'Community teleservice centres in the Highlands and Islands - a progress report', presented to *Symposium on Rural Teleservices*, Warsaw, 18-20 October 1990. Attempts to gain access to I&JCVS' original proposal to HIDB proved unsuccessful but these stated objectives correspond with those referred to by AC, the I&JCVS leader, in interviews.

[4] HIDB had rejected this original proposal in order to avoid any possibility of failure of the CTC having unfortunate ramifications for the parent. In addition it would have complicated the already Gordian-knot like financial relationship between I&JCVS.

[5] RURTEL is a computer conferencing system aimed at rural practitioners and researchers established by the Arkleton Trust in 1986 and now run by Network Services Ltd., a subsidiary of BT.

[6] Certainly the Mid-Argyll CTC was far less successful in comparison, ceasing trading altogether. *Ileach* Teleservices, as it is now known, is one of only three of the original CTCs in Scotland that still functions. Other telecottages have been established in Scotland during the 1990s and there are now at least 16 (*Teleworker*, 1997). Notably, 6 of these are to be found in the Hebrides, once again suggesting that successful use of ICT in problem-solving capacity is most often made manifest in the more remote locations.

[7] Only leading stories, and not the entire paper, are available on-line.

[8] Currently the number of links stands at 46 (last accessed May 2000).

[9] IDC was formed through the merger of two previous partnerships, the Corrum Trust Islay and Jura Regeneration Strategy and the Islay Initiative. The main partners include Argyll and Bute Council, Argyll and the Islands Enterprise, The Corrum Trust, and United Distillers & Vinters (who own the majority of Islay's distilleries). In addition, community representatives are drawn from business and charitable sectors, including Anne acting in her position as the leader of the Islay and Jura Council for Voluntary Service (I&JCVS assumed a key role throughout 1998, disseminating information and handling enquiries about the initiative. Latterly a full-time manager has been appointed).

[10] AIE, the IDC and United Distillers & Vinters fund it.

[11] Jura has its own development company also sponsored by the Corrum Trust (see section 4.1.3).

Chapter 6

Modern communications for teaching and learning: the primary schools of rural Strathclyde

Chapter outline

Processes of network 'enrolment' are further examined in this chapter which focuses upon the application of ICT in a specifically sectoral context. Since the late-1980s Islay's primary schools, in common with those found in other remoter rural parts of the Argyll region, have benefited from a level of ICT provision which is, by any measure, quite exceptional. In contrast to the previous chapter, this is a more immediate 'success story'. The chapter describes a network in which the interests of all local actors have been closely aligned from the outset. The technological frame for interaction – connective with social concerns of depopulation and isolation – is widely shared and subject to little ambiguity. Within such a 'culture of co-operation' roles have not been contested, allowing rapid stabilisation of a socio-technical ensemble to occur. However, as goal-orientated activity becomes more ambitious in its scope, a wider range of agencies must be enrolled by local actors. For local needs to be met, autonomy must be sacrificed, a 'paradoxical' effect of ICT. Increasingly, the concerns of economic sustainability must be foregrounded within the technological frame.

6.1 Pioneering the education superhighway

Pupils and teachers in the primary schools of the Argyll sub-region of Strathclyde have enjoyed the benefits of a networked computer system since 1989. In 1996 nearly 40 of these schools began to utilise video-conferencing to enhance teaching and learning, including those located in Port Askaig and Port Charlotte on Islay. In one extreme case, the tiny primary school on Iona, despite only having four pupils at present (Seenan, 1999), is equipped with 3 Apple Macintoshes with email and video-conferencing capabilities. By way of comparison, national estimates of the levels of ICT provision and of experience amongst teaching staff are shown in Table 6.1.

In common with the Western Isles (Hebrides), which developed a computer link between its outlying schools as early as 1983, the effort made by state agencies and school teaching staff to facilitate early roll-out of ICT to the region's children is widely cited as a 'success story' (DFE, 1995). The Argyll and Bute experience was

Argyll's primary schools / 148

	Primary	Secondary	Special
Average computers per school	13	101	19
Average number of pupils per computer	18	9	4
Yearly expenditure (£) per pupil on ICT for teaching	11	38	73
Yearly expenditure (£) per pupil on ICT administration	4	8	18
% of schools connected to the internet	17	83	31
% of schools with an ICT development plan	53	83	65
% of teachers with a personal email address	1.7	8.8	2
% of pupils with a personal email address	0.2	2.7	-
% of staff receiving ICT training in the last 2 years	45	36	46

Table 6.1: ICT provision in UK schools, February 1999
Source: DFEE (1999)

chosen as one of a handful of projects for evaluation for piloting the government scheme 'superhighways in education', based on the sophistication of the technologies employed and the commitment displayed by the agencies involved to the on-going development of on-line applications and services for education. Findings from the 'superhighways' evaluation have, in turn, informed the *National Grid For Learning* (NGFL), the computer network which is beginning to link together Britain's schools, colleges, universities and libraries. It is an initiative that will significantly influence the shaping of ICT in schools throughout the UK in the next decade.

6.2 Problems and solutions: achieving *interessement*

> The objective of piloting superhighways in education, as any other new technologies (sic), is to establish whether they offer the potential to enrich the delivery and experience of education, are likely to help young people meet the challenges which they will face when they enter employment, and provide them with the skills which they will need for lifelong learning. Associated with these factors are other to do with cost and effectiveness, and with social and moral implications for individuals, families and educational institutions (DFE, 1995, 1)
>
> The basis of any sort of use of modern communications and information and communications technology in Argyll and Bute was the need for communications between smaller isolated rural schools. *John* (ABC)

Beyond the immediate benefits to staff and pupils which the DFE acknowledge in their 1995 report *Piloting superhighways in education* – enhanced data-handling capabilities are equally valuable for both urban and rural establishments - ICT presented itself as something of a local 'problem-solver' to Argyll in the late-1980s. It offered the potential to redress certain long-standing difficulties for education providers in the region brought about by physical geography and class room

demography. In part these problems can be categorised in functional terms, in relation to issues such as class size, curriculum delivery and school viability. However, another level of 'need' is also discernible in which the primary schools are viewed as having a key role within the wider economy and society of the region which is itself problematised. ICT-related improvements to teaching and learning in primary schools were, from the outset, articulated with a much broader set of rural concerns.

Until 1996, local schools came under the jurisdiction of the Argyll and Bute division of Strathclyde Regional Council's education department[1]. Each education department within Strathclyde had sufficient autonomy over local affairs to develop its own educational resources. Argyll and Bute's *Modern Communications for Teaching and Learning* (MCTL) programme began to be developed in the late-1980s. In the first instance, it was envisaged that the introduction of ICT to classrooms might contribute to the *organisational* form of remote primaries by addressing the following issues:

- *Teacher isolation*: some schools are run by a single teacher lacking peer support.
- *Teaching expertise*: single-teacher schools cannot offer comprehensive curriculum-wide expertise.
- *Pupil isolation*: small schools may have only one or two children at certain key stages. 23% of schools have less than 20 pupils, while a further 35% have between 20 and 50.
- *Fluctuating class sizes*: occasional demographic 'bubbles' problematise issues such as teacher supply and resource provision.

Christine is the head teacher of the Port Askaig primary school and John is the Education Resources Officer for Argyll and Bute Council (ABC). Both state categorically that the original impetus for the MCTL came from the efforts of one particular individual. Jack Cunningham, who was Senior Advisor for the district until 1996, 'was the one who really led the way', according to Christine. He is characterised in both of their narratives in terms that suggest that he had a much broader set of concerns that simply school viability and efficiency.

> [It] was just purely down to a senior advisor. I mean, that structure was his idea, and the development of communications and ICT was his idea, and he saw the end result

> as being the development of the community. And that community would actually thrive by the development of ICT, and children with skills could bring them back into the community... Eventually these pupils could develop skills which they would take away with them to secondary schools, they would perhaps go to university or college, but at some time they may consider the fact that that ability to use ICT would allow them to return if they wanted *to their own community* and work from there and develop the community from within. *John* (ABC, emphasis added)

Effective system builders, as Hughes (1987) notes, are heterogeneous engineers, equally at home arguing over politics, economics and technical specifications. The critical role of such lead actors in such network building has already been emphasised and in the case of the Islay CTC, documented in the previous chapter, shown to be lacking. In contrast, Cunningham's MCTL programme – which offered no obvious compartmentalisation between educational, social or economic aspects of rural life – had little difficulty in quickly enrolling actors such as Christine and John. Following Bijker's (1995a) arguments, the socio-technical ensemble that Cunningham proposed would not be subject to anything like the same degree of interpretative flexibility as the Bowmore CTC.

The same notion, that what happens within the primary schools cannot be partitioned off from the wider set of problems engendered by a remote location, is subscribed to by Graham, ABC's Head of IT Services. He suggests that one side benefit of the MCTL programme has been that 'people are just becoming so aware of that technology and so they'll be able to deal with it and it should go along.' According to this perspective, efforts made to facilitate the process of education are irreducibly part of a wider remit, held in common by all Local Authority agents in an area such as Argyll, to tackle local issues in a holistic 'cradle to grave' manner.

One particular 'local' issue which is worthy of note in this context, is the significance attached to Gaelic speaking and the particular role that ICT is envisaged as playing in the task of maintaining the language's currency. Western Isles Council, as mentioned earlier, had pioneered ICT-based education as early as 1983 and Gaelic has figured prominently in this[2]. Gaelic is taught in many of Argyll and Bute's primary schools, a handful of which introduce the language to nursery pupils in Primary 1. The ability to link electronically with Gaelic departments in other parts of Scotland also assists efforts made to uphold its place in the curriculum. Looking further afield, John notes that there are different dialects in Gaelic as well and ICT now provides a chance for children to hear the dialect of Gaelic from places such as

Orkney, hinting perhaps at a wider network which lies beyond the scope of this study (an interesting contrast can be drawn here with findings in the previous chapter where staff in Islay's CTC were shown to have failed to forge any working linkages with other CTCs in the Highlands and Islands).

Moments of translation

The social construction of a series of problems – relating to physical distance, demography, class-size economics and cultural concerns – is termed the moment of problematisation in Callon's version of actor network theory and is the first 'moment of translation'. Throughout the 1980s lead actors had been aware of the growing potential of ICT, observing their deployment in areas such as the Western Isles, albeit on a limited scale. In particular, the physical geography of the region had pre-disposed these actors to closely monitor technological innovation much more closely than might have been the case elsewhere. The benefits that ICT potentially offered both to schools *and* to the broader social fabric of the region were clearly appreciated by Jack Cunningham and his staff. However, a 'trigger event' was needed before they could actually attempt *interessement*.

Contingency is a 'license to participate in history' (Gould, 1989, 285). Such a license was finally granted, in this instance, by the collocation of several influences at the end of the 1980s. A conflux of contingent influences provided an opportunity for the *interessement* of ICT and an associated range of new skills into the existing network of Argyll schools:

- The Highlands and Islands Telecommunications Initiative (HITI) was already underway. BT, in conjunction with HIDB, had pledged financial support for new infrastructure in to the region that could be utilised by the education department.
- The price of ICT hardware such as modems and PCs had fallen substantially in real terms since the mid-1980s.
- Proposed curriculum changes demanded substantial institutional restructuring for a scattered authority such as the Argyll district, facilitating the establishment of an ICT 'strategy' as part and parcel of the ensuing restructuring process.

This last influence was especially important. The introduction of a new '5 to 14' programme - the equivalent of the National Curriculum in England - required major restructuring of the school curriculum. This would pose quite a challenge to small, under-resourced rural schools. This encouraged innovative problem-solving behaviour while weakening the obduracy of existing structures. A high degree of inter-actor co-operation was required if the exacting demands set by the new reforms were to be met.

> [The actual push] was the 5 to 14 program. The directorate at the time realised that for schools to develop this properly they would have to come together because there was no point in someone in the middle of nowhere developing their own 5 to 14 curriculum and 20 miles down the road somebody's doing exactly the same job. So the first thing they did was they clustered and created primary co-operatives, technically between 4 and 7 primary schools and those schools were grouped together with the notion that they would develop the 5 to 14 programme together... And physically at first they would come together and discuss things and discuss a common co-operative development plan. *John* (ABC)

The need to share curricular expertise, managerial expertise, resources and materials necessitated the physical congregation of isolated teachers on a more frequent basis at precisely the time that affordable desk-top personal computers and modems were becoming commercially available, thereby providing an alternative to the costly and time-consuming practice of 'island hopping'. There was a clear incentive to introduce ICT to the region. 'So with the co-operative in place,' explains John, 'there was a long-term strategy that ICT was always going to be used to enhance and develop the co-operative structure. So that strategy was already in place'.

6.3 The walled garden and its willing partners

With educational administrators and teaching staff in agreement over the need for ICT in primary schools, and with an opportunity provided by the 5-14 programme to integrate new skills and technology into a broader set of curriculum revisions, the 'wiring' of Argyll primaries could now be attempted. The MCTL was to consist of three basic 'building-blocks', setting out to:

- provide computer hardware and software to primary schools.
- equip teaching staff with the necessary skills to utilise the new hardware and software.

- develop an organisational structure which might utilise existing expertise in an efficient way.

Firstly, equipment had to be procured and Strathclyde Regional Council could not be expected to fully fund the initiative. Once again, BT played a major facilitating role. With the Highlands and Islands region by now firmly established as BT's 'test bed' for ICT, existing linkages in the region with state agencies were utilised, and the need for schools to be networked was carefully factored into plans to extend ISDN coverage in the region. BT's interest cannot be viewed as entirely altruistic and from the outset some degree of reciprocity was recognised by local actors. BT (now operating as BT Scotland) is committed, under the terms of its privatisation and the resulting effective monopoly that it holds, to subsidise non-profitable services in remoter regions of Scotland. However, there were clearly many fringe benefits that could be gained from a further round of partnership, a point that is not lost on the state agencies themselves.

> So there was that commitment on BT's part- *they obviously got a lot from it* because I would think one of their best adverts - and I don't know if you saw it - was the one of the primary school, which was a dot of a building in the middle of nowhere. So that was it, it ran for quite a few weeks. What was their punch line? 'The only thing stopping the children in primary 11 in their history was the geography'. So I think BT were particularly pleased... So yes, there is collaboration, and we've had collaboration with BT for a while so we're sure of that route which is partnership with a commercial company, and *it's to the benefit of both of us*
> (*John*, ABC, emphasis added)

BT ensured that the local telecoms were capable of linking the schools to a service called Campus 2000 as an interim measure while the Argyll and Bute district set about designing its own intranet with email facilities for staff. Simultaneously, Strathclyde education department provided each school with a modem and an Apple Macintosh computer. The next issue that had to be addressed was the often severe lack of expertise in computing amongst teaching staff, recognising the inherent difficulties in co-ordinating any training programme for teachers in remote locations. The tiny size of many departments makes sabbatical leave problematic.

However, two factors allowed this problem to be neatly circumvented. Firstly, a small handful of teachers already possessed rudimentary knowledge of computing. One of these was Christine who explains that upon her return to teaching, following a career break taken in the early-1980s, had discovered that 'computers were in so I had

to do something about it, so we got an old BBC at home, and that's just to learn'. Secondly, the 5-14 programme was, in any case, precipitating the formation of small local area groups who would be meeting regularly to discuss curriculum matters. This provided the opportunity for a delegate to attend training courses further afield and to then disseminate information to the group at area meetings. This would then eliminate the need for all teachers to make lengthy and expensive journeys - often leaving their school without a teacher - for the purposes of training.

> We identified teachers within each co-operative or in each area who already had - what would you say? - an understanding and enthusiasm for the use of computers in the classroom. They either had it or they developed very quickly. But one way or another we identified practising teachers who were able to use the computer in a classroom context effectively. And they were invited to become a team called MacNet. *John* (ABC)

MacNetters - the co-ordinators within each MacNet who undertake responsibility to attend training courses and then pass on what they have gleaned - were identified by the education authority and invited to assume responsibility for a small group of teachers. MacNetters, of whom there are around 25, are each accountable to a group of between 4 and 7 primary schools and provide a first line of support for the schools in their vicinity. Their brief initially consisted of providing advice on issues such as installing and using software and printer maintenance. Training is on going, allowing the MacNetters to deal with increasingly complex queries as the expertise of other teachers in the collective develops. One area co-ordinator is also appointed who looks after several co-operatives and provides a direct link between the schools and the council directorate.

The success of the initiative pivots upon one crucial fact, which is that teachers organise and support themselves on a voluntary basis. This is of critical importance when considering the 'transferability' of Argyll's MCTL programme into other environments. MacNetters are not paid for providing this service. Schools pay for their cover while they are being trained, with a minimum guarantee of two days per year. 'And I think that's why we found it so easy,' John reflects, 'the MacNetters are paid no extra money for this. It's lucky, their enthusiasm for their use of computers within the classroom'.

This willingness of public-sector staff to assume additional responsibilities, with no concomitant financial gain, sits uneasily with the continuing drive for public

services throughout the UK to align themselves more closely with private sector business practices. John is well aware of the lack of fit between the unpaid actions of the MacNetters and a new educational culture which increasingly deals in a currency of audits, attainment targets and financial accountability.

> I gave a short presentation to Norwegians two days ago and that was one of the first questions they asked, are these MacNetters paid? 'No'. And they couldn't quite grasp the concept these teachers were - luckily - wanting to help out and be of help to their colleagues. And I'm quite convinced that the development of ICT only really happened because of the willingness of teachers in small schools to say 'well, I'll take it on board because my children wouldn't benefit unless I show some enthusiasm for it. And I would say that's a major factor. *John* (ABC)

Education providers, both teachers and administrators, do not make a distinction between their professional responsibilities and their broader role within the local community. As members of these communities, it is in their personal, as well as professional, interest to foster the use of ICT in their schools and the two are not separable. Teachers in remote rural areas must always be prepared to assume a multitude of responsibilities, as there is simply no other way for the schools to operate. Island teachers in particular are *expected* to behave as polymaths - it is a well-established role they fulfil through necessity. In the following longer extract, John describes a shared attribute that he believes his teachers possess:

> In large urban schools I would suggest that in some cases teachers are less willing to take on new initiatives, whereas there's always been a mind-set in small rural schools. For example, you don't have a janitor, you may even have to distribute the food at lunchtime. I'm not saying the head-teacher has to clean the school, but the head teacher has to take on so many different roles... And unless these teachers take on these roles and take on the initiatives they're aware that the children are going to lose out. And I *do* think a head teacher or any teacher in a small rural school would want the children to be given *now* anything that they might see the benefit of when they join a larger school. So when you put computers into small rural schools, when you put the idea of modern communications into small rural schools, teachers on the whole will tend to say 'well okay I'll give it a go' instead of saying 'not me, that 's not my job, someone else in this school has responsibility for ICT, not me'. And in Argyll and Bute, and most of my experience is of Argyll and Bute, the teachers will say 'okay I'll give it a go, because no-one else is going to help me anyway'. *John* (ABC)

Firstly, he is establishing a quantitative difference between small and large schools, and the impossibility of providing a cost-effective service unless teachers can also fill other roles. However, he then makes a qualitative distinction between the 'mind set' of teachers in 'large urban schools' and those in struggling rural environs. When he remarks that teachers will want children 'to be given *now* anything they might see the

benefit of', it suggests a sense of immediacy. When Christine looks back over the last ten years, there is a similar feeling of urgency:

> This is exceptional. We had people who were in authority who saw the future and what was coming and made the move early and because so many of us then were drawn in early, have been able to take the children with us *and keep moving ahead.* *Christine* (emphasis added)

With equipment, teaching staff and computer skills now in place, all that remained was to enrol the children. Initially, the Macintoshes were used as 'stand-alone' machines, given the limited development of the Local Authority's own intranet service at the outset. Language work was aided with the use of databases while environmental studies were augmented with the production of charts. Indeed, the walls of the Port Askaig primary school are covered with pie-charts and illustrations that the children have produced as part of their environmental studies on topics ranging from litter prevention to global warming[3].

In Callon's terminology, this is the third 'moment' of *enrolment*, following the earlier stages of *problematisation* and *interessement*. Teaching staff, ICT and the children themselves were all successfully enrolled by the education department's lead actors, bringing the network into operation. The staff were expected to rise to the challenge of implementing technical change within the network of small rural schools and they did so. Acting both through necessity and for the sake of expediency, teachers such as Christine were prepared to further distend the polymorphous role that had already been ascribed to them. ICT performed as it had been hoped that it would while the children quickly fulfilled their role by assimilating and deploying new computer skills.

At this stage in the co-construction of an ambitious new socio-technical ensemble, the emerging network can be caricatured as a 'walled garden'. Self-contained and locally-run, it remained relatively simple in terms of the functions that it could perform, with each school operating largely in isolation. Although teachers were by now corresponding by email, the children only used technology in a 'stand-alone' capacity. Consequently, some issues, such as pupil isolation, continued to be problematised. With such needs still not fully met, the network could not stabilise at this stage, retaining instead the 'softness' that is necessary if new inputs of technology are to be easily accommodated. The schools have subsequently procured a new range

of applications that are more reliant on the use of a modem in contrast to stand-alone desk-top applications such as word processing.

6.4 Further afield: lengthening the network

> So in effect what you have in some of the most rural and isolated schools probably in Britain is some of the most sophisticated and modern communication systems.
> *John* (ABC)

By 1995 some of the original aims of the system envisaged by Jack Cunningham had been met. The professional isolation of the teaching staff had been addressed through the management of the 5 to 14 Programme, while the provision of email facilities within the Argyll intranet allowed teachers to share expertise to a greater degree. However, pupil isolation was still an issue. Small schools frequently have only one or two children at a particular stage and learning isolation denies children the chance to collaborate on project work with others of their own age or level of ability. Children and teachers in the smallest schools were still facing problems involving lack of curricular expertise. Some children attending very small schools, as in the case of Iona, are taught by the same teacher for 7 years, who cannot realistically be expected to cater for all subjects at all levels.

Although the existing system was working perfectly well, it did not meet all of the objectives originally set by the local authority at this stage. However, administration and teaching staff who had foreseen the *possibility* of fully live interaction from the outset continued to keep abreast of the advances being made in the field of ICT, anticipating that it would, in time, be possible to introduce distance learning through real-time on-line interaction. Christine and the other MacNetters have never envisaged obduracy for this socio-technical ensemble. At the time when video conferencing technology first began to be introduced in the UK, Christine points out that 'we were already looking for better ways of doing it,' with reference to their existing ability to correspond remotely via email.

In the mid-1990s, video-conferencing technologies started to become commercially available and ABC immediately set about the task of recruitment. They were at last on the brink of making distance 'no object':

> On Mull we have an art specialist who provides teaching at distance. Now we're using the video-conferencing machine the camera allows demonstrations to take place showing a variety of techniques. So there's that aspect of it as well, that where curricular expertise may exist distance is no object. *John* (ABC)

However, in order to 'step up' the level of ICT in the schools, it was necessary to work with a far wider range of agencies than before. Further, coinciding with the 1996 Local Authority reorganisation, Argyll was about to become an entirely distinct entity and no longer under the umbrella of Strathclyde which was to result in a loss of economies of scale in certain departments, including education (see section 4.3). Video-conferencing was introduced through yet another collaboration with BT whose involvement remained crucial given that ISDN lines still needed to be installed for schools in some of the most remote areas. John explains that it is a standing joke in his department that 'in one of the schools it would have been cheaper to move the school to the exchange rather than bring the line up to the school.'

More sophisticated computers were now required to run video-conferencing so the new round of investment was also dependent upon successful appeals being made for support to the PC manufacturer Olivetti, the Faculty of Education of Strathclyde University and the EC. It also required a much greater degree of co-ordination between the efforts of the education department of Argyll and Bute Council and other branches of local government than had previously been the case. For video-conferencing to work on a multi-linking basis (linking more than two terminals), users must work through a bridge. Initially the education department accessed a bridge commercially at a cost of £70 per site per hour. This was prohibitively expensive. However, social services have recently developed their own bridge which the education department can access at a significantly reduced rate. This allows head teachers to hold conferences without physically leaving their respective schools.

37 schools[4] are now using VC8000 systems with ISDN2 connections. Echo cancellation units have been installed, further augmenting the array of technical tools that feature in each co-operative, and which allow groups of children to be broadcast to in real time by specialist teachers in other schools. However, it is notable that not all of the remoter schools are using video-conferencing. The installation of the technology had to be at the request of a co-operative and it was made clear that a

group could not enter into the scheme unless all members of the local co-operative were willing. Currently 7 co-operatives are using it.

The network of suppliers that underpins this programme is global, yet the information exchange that it facilitates remains avowedly local. Christine favours the route taken so far, where Argyll council has developed its own self-contained Intranet and has developed much of its own software and resources. Where excursions have been made beyond the bounds of Argyll they have, to date, been exceptional and, in Christine's narrative, rather troublesome:

> At present I'm trying to negotiate with a school down in Dorset because they've been doing some of the Katie Morag stories and they want to speak to people but you have to engineer these links because we don't keep lists of people's telephone numbers. *Christine*

'We were in isolation' explains John. Now they work more closely with other council departments, especially IT services, in order to maintain a complex system. To enrol new technologies into the area network, it was also necessary to enrol a much wider range of supporting agencies. Such an extension of the network necessitates that certain sacrifices are made. In particular, ideas become far less fixed as decision-making becomes increasingly bilateral as a growing number of actors are involved. The work of mobilisation – of ensuring that meanings are shared and understood throughout the networks – becomes harder in consequence.

6.5 Children and money: the costs of network building

Increasing ambiguity, with respect to the education sector's relationships with commercial capital, as well as the necessity of forging links with a wider range of agencies and interests, marks the latest phase of development of the Modern Communications for Teaching and Learning (MCTL) programme. In particular, it is anticipated that the government's new National Grid For Learning (NGFL) will provide new challenges, not least the sense of autonomy that Argyll's educators have developed during the 1990s. The NGFL was launched on 6 November 1998. The government had previously announced, in October 1997, that a deal had been struck between BT, cable companies and the telecommunications regulator Oftel to provide low-cost network access to all 32,000 British schools by 2002. In addition, £100

million of government funding would be provided for new computer hardware and software in the financial year 1997-98. Graham (NAC) believes that it will have 'a marked impact on the way things happen in the area'.

A second structural influence on Argyll education is the nation-wide set of reforms currently being introduced to the Higher examination system. Secondary schools are now facing the same problems that the primaries did ten years ago, as new curricular demands look certain to pose problems for smaller secondary schools such as Bowmore on Islay. Many small single teacher departments are faced with new challenges. Firstly, the *Higher Still* programme will offer courses at a variety of levels, just as the Advanced Supplementary system in England and Wales has sought to provide pupils unable to attain a standard A-Level pass grade with achievable targets. This may entail single-teacher departments having to work at a variety of levels with the same age group, with the commensurate extra demands on curriculum materials, coursework moderation and teaching practice. Rural schools may therefore have to adopt a co-operative approach just as the primary schools did if they are to share resources. John hopes that 'video-conferencing may help smaller schools to find opportunities for other principal teachers to provide tutorials and vice versa'.

However, while it may be possible to utilise ICT to similarly enhance secondary school teaching in this way, it will require funding which will further drain the resources of Argyll and Bute Council and limit the capital available for regular technology refresh in the primary schools. Graham is concerned that the Council may not be able to find the necessary funding to maintain its existing services, let alone any new demands that the NGFL may make, and acknowledges that alternative funding is urgently needed. In such a context, 'partnership' between local public agencies and commercial interests such as BT could increasingly come to resemble what McCrone (1992) describes as the 'colonial' model of Scottish dependency where local agencies in remote areas are perpetually re-cast in the role of 'pleading poverty' to external parties.

Graham suggests that, despite ten years of investment, the initial original concern that local children are not deprived of the same educational opportunities that their urban counterparts have access to, periodically resurfaces. It may well become increasingly hard to justify maintaining and upgrading expensive equipment, thereby retaining the relative advantages that have already been won. Following a £109,000

overspend in their annual education budget, ABC finally closed Portnahaven Primary School on Islay during the summer of 1999 despite a long fight by the local community (*Aberdeen Press and Journal*, 1999d). This was the sixth such closure in the Argyll region in four years and within this context financial support from a wider range of agencies is clearly vital. In such a climate, there is a risk that ICT might increasingly be used as a means to cut costs rather than to genuinely enhance services in such an economic environment. Reducing the travel costs of specialist teachers (for which Argyll is accountable) has certainly been a benefit to the authority. While more children can, in theory, benefit from such expertise via video-conferencing, it is also undoubtedly financially provident for the Local Authority to promote such 'virtual' teaching practices over and above traditional face to face contact.

Whether children receive the equivalent benefits from a 'virtual' lesson that they do from a 'real' presence in the classroom is an issue that is well beyond the scope of this thesis. What is clear is that both John and Graham believe that if the system is to remain progressive - enhancing learning and teaching rather than rationalising existing schools and services through over-reliance on video-conferencing - then it is more important than ever to involve outside agencies. 'BT supported us over the last 2 or 3 years,' notes John, 'and it is going to be an issue over the next few years, is funding. And I'm keen that, especially in the area of video-conferencing, I'm keen that outside agencies become more involved'.

The best interests of the children, and the wider community to which they belong, still clearly inform the latest developments that are under way. Most recently, ABC has begun to promote video-conferencing in a support role for island children attending Oban High School. The school provides hostel accommodation for pupils drawn from six primary schools in outlying areas. These children, opines Graham, 'not only have to leave the intimate setting of a small primary school, they're also leaving the intimate setting of their home'. The council are concerned to 'ease that transfer in any way' and are encouraging those children approaching secondary school age in the remote primaries to undertake a series of regular activities together. These need not necessarily be curricular but may relate to personal and social development where the children literally get to know each other. Eventually Graham foresees a situation where children arriving at Oban High School in the first year may have been working with each other for several years prior to their arrival.

Video-conferencing will then provide opportunities for children to correspond with their parents and for parents who cannot easily attend parents' evenings to speak directly with senior management in the teaching staff. Currently, children are given information by a guidance teacher who visits them as they are completing their primary school education. They can only afford a single visit but could augment this with video-conferencing sessions.

> So again, its community interest again, and the well-being of their children once they leave the community *so there's more of a link between the school and the community*... we're just at the early, early stages of but I'm quite excited about it. *John* (ABC, emphasis added)

John continues to take great pride in the links that exist between the education department's work and the buttressing of local communities. Although not 'evangelical', he shares with certain teachers a sense of pleasure in witnessing the schools catalysing local interest in ICT:

> When I took the video-conferencing machine to Kilchattan primary school on the isle of Colonsay, the head teacher had put a notice in the post office that I would be coming and there was a stream of parents and adults just coming in to see what was happening. It was great! And I think the head teacher was delighted that these people wanted to come in the door and see what was happening. So high hopes for the small schools and the community! *John* (ABC)

However, the autonomy and independence of the first few years cannot continue. The early emphasis placed upon local decision making and locally arrived-at technical solutions to Argyll's educational and demographic problems may sit uneasily with wider demands from the new NGFL. Is a new state of dependency in the making that would, paradoxically, be the exact antithesis of the original intended outcome of the MCTL initiative?

6.6 From cradle to grave: education in a socio-technical context

It was argued in Chapter 6 that failure by some actors to identify primarily with Islay as a network-in-itself undermined the Community Teleservice Centre initiative. By imposing constraints upon the CTC to succeed as a network-in-itself, an important round of technological investment failed initially to generate any kind of useful multiplier. This is not the case with the video-conferencing system now in place in the primary schools on the island. The 'cradle-to-grave' philosophy espoused by the

founders of the scheme placed primary school ICT activity within the broader context of rural life from the outset. At several points Graham and John have indicated that the schools have an important role in fostering wider awareness of ICT in the community.

The exact parameters for such involvement are, however, highly ambiguous. John foresees a situation where adult learning could be conducted after-hours at the primary schools. On the island of Colonsay, which is even further west than Jura, community groups have been considering the possibility of utilising video-conferencing for French courses. Psychological services, career development services, and speech therapy have all been identified as further departments that could utilise video-conferencing to improve the quality of services provided to outlying rural areas. John recognises that it cannot replace the quality of service that is provided by education and health visitors 'when they're there', but it would provide new opportunities for distance support.

The prospect of broadening links with other areas of education and health is unproblematic for John and in many ways it can be seen to reciprocate the heightened demands that the education department is placing on other branches of local council in order to maintain the video-conferencing bridge. NGFL access is likely to be linked into the Argyll Intranet and John notes that 'we'd obviously contribute funds we'd get from NGFL to this project'. As Chapter 4 showed, the reflexive relationship between technology and society is evident in the ways in which ICT poses new challenges to existing governance structures and this is clearly demonstrated here through the collaborative funding of the bridge. Departmental money cannot be strictly ring-fenced if such expensive new technologies are to be procured. Accordingly, new partnerships have been forged to upgrade levels of service.

Yet, despite the high financial demands that ICT places upon the education department, John remains ambivalent towards the idea of sharing educational resources with local businesses. In many cases primary schools are, of course, equipped with precisely the same resources that are needed for a telecottage and which actors such as Anne, on Islay, have been striving to secure for the business community (see Chapter 6). Computers lie idle at weekends and in evenings, yet John makes it clear that he sees a firm boundary existing between the role that ICT plays in the functioning of the schools and any possible use of it by commercial interests.

> I don't see primary schools becoming an extension of the various businesses in the place. I don't see that sort of use. Although having said that in Tobermory there was quite a lot of people coming in, in yachts, in the summer and business people have approached the school and asked if they can use their facilities just to catch up with things. So there's an awareness of what the schools have. *John*

ABC therefore has a very ambiguous relationship with private enterprise given that they are so heavily reliant upon external commercial actors such as BT to maintain technical standards in the region. John accepts the reciprocity of ABC's relations with BT and the role that the authority's schools have played in the past in the company's advertising campaigns. Meanwhile, as both John and Christine mention, some of the software that has been developed by Argyll has subsequently been marketed to other authorities. 'It is quite far ahead of a lot of places,' notes Christine, 'so there's a lot of people paying for information, paying to get some of this stuff'.

Linkages between the private sector and publicly-sponsored education are increasingly common and corporate funding of education has grown so fast that 85% of British schools allowed promotion in their classrooms last year (Cohen, 1999). Large corporations such as Sainsbury's and Walkers have taken a leading role in supplying ICT to schools through the practice of collecting vouchers[5]. At a time when private capital is widely viewed as indispensable to the effective provision of public services, the politics of the network appear to be subject to internal contradiction.

Given that greater funding is now needed for secondary schools in the region, the long-term sustainability of technically assisted learning in the region is by no means secure. Already, the remarkable self-sufficiency of the primary schools, who have developed their own resources in isolation, does result in a notable drop-off in available resources for children when they enter secondary school. If the original vision of the MCTL programme - a 'cradle to grave' approach to ICT which is initiated at the primary level - is to become a reality then greater efforts must be made to maintain and further enhance the comparative advantages enjoyed by secondary schools in Argyll with respect to ICT. 'Children are surprised at how low the level of IT awareness in secondary schools is after what they've been exposed to in primary schools,' notes Graham.

AIE have recently taken an active lead in addressing this issue by establishing an education business partnership that is run in conjunction with the council's education

department. They aim to 're-introduce' children to ICT after their first few years at secondary school by organising visits for fourth and fifth year students to small ICT firms such as Pict, a web-design firm which is located near Oban, in the hope that it will make them consider the 'third option' more seriously. Locally, it is perceived that children have traditionally had only two options following the cessation of schooling. One is to go to university and not return, the other is to remain but with the limited life chances associated with low-skilled and seasonal work. Faith that the third option could, in time, become an easily achievable goal lay at the heart of the original assessment of local needs that underpinned the MCTL initiative. Much has already been achieved towards this end, but clearly issues of funding and sustainability remain an important concern.

6.7 When things fall into place

> So things are falling into place, as I say. *John* (ABC)

Unlike the CTC initiative, 'things' have fallen very nicely into place in Argyll's primary schools. As the previous chapter illustrated, a high degree of interpretative flexibility amongst Islay's business and community groups led to the early failure of the CTC. The eventual outcome of *Ileach* Teleservices has been hard-won. In contrast, Argyll's MCTL initiative has gone from strength to strength. Co-operative in its ethos from the outset, the schools, staff, pupils and machinery collectively constitute an actor-network that has been effectively mobilised through the use of a common vocabulary of problems and solutions. For Callon (1986) this is the essence of a stable and durable network: only voices speaking in unison are heard. In this instance even the local Enterprise Company appears to be aligned with the holistic and de-compartmentalised approach to local sustainability envisaged by the progenitors of MCTL.

However, the nature of what they have helped build has become more apparent to the lead actors as their plans have grown more ambitious in scope. Originally, local actors subscribed to a 'social shaping' approach to the overall dynamics of rural life, with ICT cast as a 'tool that exists to serve'. What is now clear is that as their network has grown to embrace more sophisticated technologies, and in turn the support from exogenous forces that is needed to sustain them, local education

providers can no longer regard ICT in such simple terms. Technology is, in fact, actively prising Argyll out of its starring role as the doyen of 'dot com' schooling as, with prices tumbling, its presence becomes the norm rather than the exception in educational institutions throughout the UK. Technology increasingly assumes the lead role in educational discourse as fear of the nation 'losing out' in the information age drives central government in its demands for the NGFL to be implemented nation-wide. Meanwhile, within Argyll itself, the demands that ICT, envisaged here as an actor, is placing upon education providers have provoked an unprecedented degree of co-operation between different branches of local government. The same set of demands also look set to challenge certain long existing divisions between public and private spheres of activity in rural communities.

A recurring feature of the 'Information Society' discourse, as Chapter 2 describes it, is the ease with which the belief that technology exists to serve rapidly segues into a deterministic conception of social impact. A belated recognition that 'telecoms cost' is taking the educators of Argyll into surprising new domains such as enterprise culture, as they are forced to forge ever more alliances in order to maintain their comparative advantage. This is not unproblematic. Relations between BT and local public agencies can increasingly be seen to be symptomatic of a much older 'dependency' model of rural infrastructure provision. The degree to which ABC has a clientilistic relationship with BT Scotland may be increasingly called into question. As with the CTC initiative, so to do the issues of funding and sustainability, as they relate to Argyll's primary schools, also call into question the issue of power and its location within the flows of capital and knowledge that tie together the local and the global.

Notes

[1] There were three education divisions within Strathclyde: Argyll and Bute, Dunbarton and Glasgow.

[2] Between October 1982 and October 1983 the Western Isles Council's Education Department introduced BBC microcomputers into all of its schools. Concurrently, an authority-wide online database had been established, providing modem access for all schools. This service was called Bruetel and it used view-data technology similar to BT's UK-wide Prestel service and provided menu-driven bilingual learning materials in viewdata format while also allowing staff and pupils to send and receive email messages. All Bruetel materials were in teletext format with only 6 colours - the same technology that is still utilised by Ceefax today. Bruetel has long since adapted to standard Internet technologies and is now termed Bruenet. However what is remarkable about Bruetel / Bruenet is not simply its extremely early introduction but Western Isles' insistence on bilingual resources. Western Isles local authority describes Bruenet's purpose as allowing 'pupils' learning experiences to benefit from world-wide access to multimedia learning materials whilst allowing others outwith the region to be enriched from forging closer links with schools in the traditionally stronger Gaelic-speaking heartland - Bruenet has arrived!' (http://www.w-isles.gov.uk, last accessed October 1999)

[3] Christine has also attempted, from the outset, to integrate 'IT handling skills' into the curriculum, teaching the children what goes on 'behind' the computer, ensuring that they can perform simple tasks like building a printer list, customising personal Desk-top applications or adjusting volume levels when using sound.

[4] At October 1998, according to John during the interview.

[5] In the US, the television network Channel One provides free use of satellite systems to impoverished schools. In return pupils watch a ten-minute commercial break in the current affairs program broadcast each day. Some 8 million children watch it. Pepsi, Reebok, Twix and the US Military are among the organisations that pay $200,000 for 30 seconds of air time to this captive market (Cohen, 1999).

Chapter 7

Rural teleworkers: linking local and external circuits

Chapter outline

This chapter draws upon the experiences of those members of the survey group who rely upon ICT to generate income by providing services to individuals or organisations beyond their local Travel-To-Work region. All, bar one, are 'incomers' to the region and a 'biographical' approach is taken, focusing upon the pivotal point in each life history when the decision was made to relocate to a rural area and the role that ICT has played in providing viable employment. Applying Actor Network Theory as a heuristic device, an analysis is conducted of these new networks of telework. To what extent do these teleworkers act as 'conduits', effectively linking their local economy with external interests? Do they always act to optimise such potential linkages? Despite the small number of cases that exist in the Strathclyde region, it is argued that a collective experience is discernible which highlights the complex and contested position that rural areas and their inhabitants occupy in relation to the 'global' flows of the information economy. The chapter proceeds to question whether these teleworkers can sustain the 'ambiguous' roles that they have adopted.

7.1 Telework in the UK

Teleworkers are individuals who have incorporated ICT into their employment practices in a way that enables them to work from home[1]. The ease and efficiency with which information can be transmitted across space enables distance-working to be readily adopted by individuals and firms previously anchored to central and inner urban areas. The ideal of *rural* telework enjoys special status in Information Society rhetoric (Masuda, 1981; Toffler, 1981; Nilles, 1985) and this chapter examines how actual outcomes compare with pre-existing perceptions of the practice[2]. It should, however, be noted from the start that the concept of telework embraces a range of possible working routines.

One useful way of differentiating between different types of remote working, employed by Qvortrup (1993), hinges upon the degrees to which the worker conducts tasks in real space or virtual space. Telecommuting is the first phase in an organisational trend that involves an early fragmentation of centralised organisations, as office workers spend increasing amounts of their work-lives at home, connected to

their office via a modem. Teleworking, the second phase, is characterised by decentralised work spaces that are occupied by individuals who are still functionally and symbolically linked to central offices. The third phase, networking, is characterised by the growth in new specialist services, greater emphasis on computer conferencing networks and a shift towards the conception that the workplace need no longer be viewed as a fixed geographical space but rather as a set of relationships, a network, an intellectual space. This is 'the elusive office' (Huws, Korte and Robinson, 1990, 208)[3].

Engaging more explicitly with the geography of telework, Huws, Honey and Morris (1996), in a study of English telework, suggest that several categories exist[4], each of which has its own regional bias:

- Teleworking which is based partially in an office and partially at home, typical of a 'South Central England' manager.
- Teleworking which is exclusively home-based and carried out for a single employer, typically carried out by women workers in peripheral areas and involving little skill and subsequently low pay.
- Freelance teleworking that is essentially footloose but is concentrated in 'middle England', conducted by highly skilled individuals involved in computer programming, design, writing or accountancy.
- Relocated back-office functions, either carried out in-house or out-sourced, and generally located in former industrial areas unless rural regions can offer attractive incentives to locate there such as development grants or advanced telecommunications network access.

As Chapter 5 showed, ICT initiatives in rural Strathclyde have attempted, not always successfully, to strike a balance between encouraging growth in the latter two categories. 'We need both spreads,' admits Graham, Argyll and Bute Council's Head of IT Services. He recognises that while the presence of a cache of professional teleworkers may boost local economic performance indicators, there is also a poorly-skilled segment of the population that cannot find full-time employment in the area's seasonal economy and would benefit greatly from a call centre.

The practice of telework has, increasingly, great relevance to rural geography and to the on-going debate on counterurbanisation in the UK (Champion, 1989; Cloke and Little, 1997; Boyle and Halfacree, 1998). The migration of people from urban to rural areas has established itself as 'something of a fact' over the past few decades (Boyle & Halfacree, 1998, vii). Despite evidence that trends can fluctuate (Johnson and Beale, 1994), North American and European countries continue to sustain rural regeneration, although the effects are not uniform between countries (Kontuly, 1998) or between regions in individual countries (Champion, 1998), while empirical definitions remain notoriously contested (Halliday and Coombes, 1995). Undoubtedly, ICT will play an increasingly important role in sustaining these complex processes in the longer term.

The aim here is not to produce an *explanation* of technically enabled counterurbanisation *per se*[5]; rather, this chapter theorises the 'lifestyle strategies'[6] of a time and space-specific group of teleworkers, the majority of whom are migrants. The focus is upon the ways in which these teleworkers are interfacing with pre-existing social and economic relations in more localised settings. Such 'interfacing' has a functional aspect as teleworkers extend local production and consumption relationships through their activities. Their personal biographies – and, in turn the biographies of the technical resources that they draw upon – aid understanding of how what kind of relationships are proving to be sustainable. 'Interfacing' also has other important dimensions. As has previously been suggested (section 1.3, section 2.3.2), notions of the rural idyll serve as a technological frame that guides the actions of potential migrants to rural areas. How do such teleworkers' lived experiences of the countryside live up to their initial expectations and how, in turn, might they begin to (re)construct a new 'hybrid' rurality as a result of such experiences?

7.1.1 The selection of case notes

The interviews used in this chapter are selectively drawn from the wider programme of research, following the premise that the actors must have economic relations with organisations or individuals beyond their immediate travel-to-work area and that such interaction must be electronically mediated and could not be successfully sustained without ICT. Nine individuals fit these criteria and their biographies are shown in Figure 7.1. Several aspects of these life-histories can be stressed from the outset:

- All have economic relations with actors beyond their local travel-to-work area.
- In almost all cases the activity identified as 'telework' yields only part of their total income.
- Eight are migrants, making the survey connective with existing work on counter-urbanisation. The ninth is a return migrant, having returned to the area to work after completing a university course.
- All are white and eight are male. Their narratives do, however, mostly emerge as husband-and-wife stories. Although their wives are not actively using ICT, the biographies should, nonetheless, be recognised as belonging to a partnership. In the one case where both partners are teleworkers they chose to be interviewed jointly (Rob and Isla).

Ways to work

The details given in Table 7.1 cover the period from 1974, when the earliest of the group migrated to Strathclyde, through to 1999. A clear historical distinction can be made between those migrants from the mid-1970s - all now in their early fifties - and the recent migrants, arriving since the mid-1990s who are more typically in their thirties. Although the group is small, a typology can also be established based upon the nature of the ways in which ICT has been contingent upon personal biography. There are five possible courses of action:

- An individual migrates into a rural area without making any substantial change in the nature of his/her field of employment. ICT-enabled counterurban migration thus brings increasing numbers of professional teleworkers into rural areas. Individuals may be entirely self-employed or may work for a firm which is happy to adopt a new spatiality within its operational structures.
- A 'native' resident develops ICT skills either *in situ* or temporarily leaves for training. With the provision of technical resources, he/she attempts to develop an entirely new enterprise, such as web design. In rural Strathclyde such activity is termed the 'third way' by state agencies (see section 6.6).

- An older migrant re-adopts a previous working practice as technical resources are made available. Typically, this involves a reversion to an earlier chapter of life history, pre-dating rural residence.
- A long-term resident, either 'native' or 'incomer', substantially changes the way in which an existing venture functions, through the application of internet tools[7], developing new markets for products at an increased distance.
- A third party provides local residents with employment. This is the call centre model that has been so successful in the Western Isles but has yet to be adopted anywhere within this part of Strathclyde.

Individual action and collective behaviour

The group surveyed here is of sufficient size to exhibit signs of what Boyle and Halfacree (1998) term 'collective behaviour'. Drawing on the work of Anthony Giddens, they suggest that any analysis of rural change linked with in-migration should begin by recognising the structural conduciveness of post-war Britain to this trend. Rising levels of prosperity and improvements to rural infrastructure can be allied with understanding of the strains of living in a metropolitan environment to provide an ample explanatory framework of why migration might possibly occur. The associated spread of a cultural belief in 'the rural idyll' is also well documented (Williams, 1973; Thomas, 1985; Short, 1991; Schama, 1996)[8]. Little social control is exerted to the contrary as the collective action is 'highly conducive to the support of many key features of a patriarchal capitalist society' (Boyle and Halfacree, 1998).

However, the actors are still passive in this conceptualisation, subject to the hegemony of literary 'aga sagas', and successfully interpellated into their course of action through the sense of longing that is induced. Boyle and Halfacree argue that instead of imagining that a time-specific strain spurs action, thus allowing structural factors such as the oil shocks of the 1970s to be advanced as causes-in-themselves of counterurbanisation, actors must be invested with agency. With the right interpretative framework, they can be shown to be 'spurred into action as resources allow, with a tendency towards action being under the surface all along'.

These resources include ICT and, in accordance with Actor Network Theory (ANT), it is seen to be exerting agency. Indeed, it is a bundle of humans and

	Purposive teleworkers (section 7.2)				'Rip van Winkles' of telework (section 7.3)			ICT- led (7.4)
Currently: *Previously:*	**Richard** *Arran* *Arran*	**Andrew** *Arran* *Birmingham*	**Roland** *Kintyre* *Oldham*	**Martin** *Jura* *London*	**Dave** *Islay* *London*	**Rob & Isla** *Kintyre* *Midlands*	**Bill** *Arran* *Fife*	**Mike** *Arran* *London*
1974					Moves to Islay, self-sufficient			
1980						Move to Kintyre, establishing a B & B	Moves to Arran with background in electronics	
1982					Re-enters employment, lorry driving			
1983						Both begin to teach again; requires under-standing of early PC software packages	Establishes reputation as 'problem solver'	
1984								
1985								
1986								
1987	Left Arran						Secures remote work as data-base designer	Unexpectedly receives early retirement
1988						Formalise role as local 'problem-solvers', starting PC maintenance business		
1989					Uses PCs at lorry depot			
1990								Moves to Arran, sets up pensions consultancy
1991					Manager of Bowmore CTC	Involvement with mid-Argyll CTC project	Formalise role as local 'problem-solver', starting PC maintenance business	
1992					Recommences language trans-lation work via modem			
1993								
1994		Moves to Arran, with established software contract; Finds local market for PC hardware supplies Quits supplying PC hard-ware	Moves to Kintyre With commune Teleworks by designing databases for existing clients; diversifies by providing local PC supplies	Moves to Jura, but fails to secure remote work Accepts software contract (London firm), starts commuting Leaves Jura		Begin to telework, using ICT to provide support and training remotely.		
1995					Formalises role as local 'problem-solver', starting PC repair business			Forced to adopt ICT for business use by insurance companies
1996	Returns to work for Project Orchil; Attempts to gain freelance Web design work							
1997								
1998							Establishes *arran.online;* Offers web design services	Watches client base grow through use of ICT
1999	Leaves Arran	Now attempting to diversify						

Table 7.1 Telework biographies 1974-1999

nonhumans - individuals or families allied with modems and fax machines - that departs for the countryside in the 1990s and attempts to occupy a complex and at times ambiguous point in existing local networks, whilst remaining connected to wider circuits of production and consumption. A key issue which must then be addressed, if Giddens' model of shared interests and cultural norms is to be accepted, is the uneven distribution of resources which facilitate such actions. It is notable that the survey group were affluent professionals before migrating, already endowed with skills and capital. It was relatively easy for this group to form their own working alliance with ICT and act upon their desires.

In the analysis that follows the aim is to draw upon specific 'structural' concerns that have pre-disposed the actors to make key life-choices, roughly periodised according to their individual age and length of residence in Strathclyde. With this in place, it is then possible to proceed to an examination of how contingent factors spurred them into action, as resources became available. In turn, this leads to consideration of how they have negotiated their role both within rural communities and with the wider production-consumption networks in which they still wish to remain enrolled. Finally, the wider significance can be assessed of such attempts to construct a 'millennial' rurality[9] which is at once local and yet tied to a much wider space-economy through the flows of work transactions.

7.2 Seeking the best of both worlds: purposive teleworking

Andrew, Martin, Richard and Roland have recently acted upon a long-standing desire to work from the country. The former three migrated with their partners and families, while Roland is a member of a religious commune that re-located *en masse* to Kintyre. In all cases a general desire to re-locate to the countryside required an actual trigger event before it could be acted upon. In Richard's case, having grown up on the island, the opportunity to return came through a part-time offer of work with the island-based charity Project Orchil, an income he anticipated could be augmented through teleworking as a web site designer. He accepts that his experience is unusual in many respects.

> I'm one of the few people who chose to come back to the island. But at the same time there are a whole lot of social issues about wanting and needing to move away

> from the island when you're that age. Nothing would have stopped me moving off the island when I was 17. *Richard*

For the other recent migrants there are time and space-specific aspects to all of their stories. Martin's case, for instance, is quite unusual, as Jura's first teleworker. Land ownership on Jura is such that new housing stock is not added and there is a 'waiting list' for potential migrants that can last for up to ten years. However, as noted in section 4.13, when his wife successfully applied for the position of district nurse 'a house was made available for her'. Martin had been looking for an opportunity to attempt working as a self-employed IT contractor from home. Finally, the necessary resources - in this case a house and the capabilities of modern ICT - had been made available.

Similarly, in 1994 Andrew abandoned a full-time position as on-site IT administrator for a firm in the Midlands. His decision was based upon his belief in the superior qualities of rural life: 'I took a huge risk because I wanted to live here,' he explains. Like Martin he was confident that his skills would afford some kind of likelihood given technical support, but was unsure exactly what form it would assume. However, he knew that he had become indispensable to his old company and that he would most likely be offered freelance work.

> I gave everything up to come and live here and I still needed to make a living so it certainly wasn't a retirement option...So I'd suddenly disappeared and I was the only person that ran the network down there and they suddenly realised how much they didn't know. And I've re-written a few programs, written some new ones. *Andrew*

Roland's story has unique aspects, as a member of an 8-strong Christian community that bought an old farm in Kintyre in 1994. In collaboration with two other members, he provides computer support for local businesses in Campbeltown while teleworking by designing Access databases for a UK-wide client base previously established while running a small IT business in Oldham prior to his relocation. Since moving to Kintyre he has designed a database for ABC's school bus company and was, at the time of the interview, commencing work for a haulage company in Dunbarton and also for a fishing co-operative in Tarbert. However, he has not recruited nearly as many new clients as he had hoped to. Although Roland's primary motivation was 'to be part of a Christian community', he anticipated using his skills once they had established the farm as a viable enterprise.

> And the first few months all we did was get the weeds down to 2 foot high or what have you. When we arrived the central heating system didn't work. You turned the water on and water jetted out everywhere. That shed was live, if you'd touched the walls you'd have got a shock. So everywhere we looked there was a real problem, but after 4 months we said 'hey, it's about time we started a business'. We hadn't got any money, and I started this computer business. *Roland*

Although he already had 'considerable' computer skills, it was the arrival of facilitating technologies that allowed him to engage in remote working. Use of email and the Internet have revolutionised his distance-working relationship with long-standing clients.

7.2.1 Out of sight, out of mind?

Andrew, Martin and Roland all migrated intending to utilise their existing client bases while diversifying further by gaining new contracts. Richard, starting from scratch, hoped to firstly develop self-employed Web work for tourist businesses on Arran and then expand into other markets in western Scotland. Their high expectations - of establishing successful external linkages while linking socially with tightly-knit rural communities - have encountered unexpected difficulties on both fronts. In particular, the technology has not behaved as had been expected. As explained earlier, despite the highly vaunted ISDN initiative, coverage remains patchy. The remoteness of the area also hinders transmission using standard telecoms. In particular Roland, who is located 8 miles from Campbeltown, is about as far away from an exchange as it is possible to be in the UK and their signal has to be amplified at the exchange to secure internet access.

All encountered difficulties when trying to extend their client base, voicing 'out of sight, out of mind' concerns. They profess that it is difficult enough to maintain existing contacts let alone recruit new ones.

> I would love to see that teleworking would work, would actually provide an income from its customers but I don't see it... any work that I've got that I do remotely at distance from a customer, it's because I know that customer personally already, they know who I am, they know my face and then you can work remotely because they know who they're talking to. If you've never seen the person, my experience is you never get the work. *Roland*

> It's funny but you very quickly find that you actually cut yourself off and that's another issue in moving back to an island. I think it's probably allied to this 'out of sight and out of mind' view. By choosing to come and live on the island you actually rule yourself out of forms of employment. Employers kind of look at your CV and look at where you live and think well 'why aren't they working for ICL or IBM doing such and such?' *Richard*

Richard perceives that there may be a prejudice against remote rural workers simply by virtue of the fact that they are seen to be satisficers who wilfully choose not to optimise their position within the market place. This is a recurring paradox of 'the Californian ideology' (Barbrook and Cameron, 1996) wherein the utopian connotations of informationalism must constantly be squared with the high expectations that go with a vigorous enterprise culture as epitomised by the success of Bill Gates.

The physical aspect of remoteness is also a difficulty. Despite ICT's much-vaunted potential to annihilate distance, all of the group maintain that some degree of 'physical' presence is still necessary, either when securing contracts or at key points of their duration. At one point Martin was commuting to London on a weekly basis, which was an expensive, physically draining and time-consuming effort given his location on Jura. Richard has found the costs of seeking off-island work a deterrent to the procurement of new contracts. The same is true for Roland; even though Kintyre is part of the mainland it is still the best part of a day's drive from the southern end to either Oban or Glasgow.

7.2.2 Square Pegs, Round Holes

Following their arrival, all have had to significantly re-orientate their priorities and working practices in unanticipated ways in order to secure a livelihood. In each instance an imagined role - linking local and external circuits of production and consumption through the practice of telework - has proved to be difficult to maintain. People, places and technology have all behaved in unexpected ways: clients have proved difficult to recruit, physical geography remains an expensive obstacle and technology does not always perform reliably. As relatively young migrants, far from retirement age and lacking great capital assets, they have faced hard decisions.

Andrew, for instance, hoped that teleworking – specifically, remote programming and software design - would provide a sustainable income, but he found it hard to get work other than with his old company and this was insufficient to live off. However, he noticed that the local catchment on Arran was large enough for him to offer PC services at a time when rapid improvements in the capacity of desk-top PCs were occurring and many first-time buyers were entering the market.

> And I moved in a completely different direction. I didn't expect to be building PCs. A couple of upgrades here and there, yes, but potentially three years ago it was going to be software based. I was going to see how the land lay and go off and do training courses and what have you. I got completely side tracked from that by the amount of hardware I've been doing. *Andrew*

Teleworking activities continue to provide part of his income but he admits that he will need to do more in the future as hardware provision has recently become harder to sustain, due to rapidly changing technical specifications. If this is not possible, Andrew may have to leave the island because, as he sees it, 'I cannot risk everything I've got on what, certainly on past evidence, may not come to fruition. So I've got a bit of work to do, but I'm pushing now'.

There is much in common here with Roland's account of life on Kintyre. He and his associates have adopted the role of local PC suppliers, an opportunity that was opening up at exactly the time they arrived, given the rapid fall in hardware prices that began in the mid-1990s. Here too, the path of least resistance has been to fulfil a role providing services to the local community given the unexpected difficulties that have emerged in maintaining remote contracts. However, both Roland and Andrew have only been able to adapt in this way by virtue of already being in possession of the necessary additional technical skills.

Neither Martin nor Richard possess the hardware skills or the inclination to similarly diversify into service provision (Richard would, in any case, have faced competition from Andrew and Bill on Arran while Martin could not have gained much work from a local catchment of less than 200 people on Jura). Faced with continued difficulties in sustaining an adequate income, both left Strathclyde in early 1999. Richard left Arran to take up a post as a software developer for a firm in Cumbria. He explains that as a native islander, he had not been chasing after an idealised rural existence, having previously experienced country life. Other people, he suggests, might stay in his situation, despite the low earnings 'because that's the kind of life that they've chosen to lead'. His approach to rural teleworking is far more pragmatic.

> A lot of them don't make the choice I'm now making which is to move away and try and find some more money. But with an eye to being in skills that I can then bring back to a rural area in a few years time when the options for telework will be greater and I'll be able to make more of a success of it. But at the moment it's a grind, it's a struggle and I can't make a decent living... the rewards for it, yet, aren't big enough. *Richard*

Similarly, Martin abandoned Jura in early 1999 having failed to secure freelance software development work. As an interim measure he initially accepted a contract with a London-based European firm which entailed his attending fortnightly meetings in either London or Brussels. Exhausted by the constant commuting, he relocated to London for a six-month period in 1998, returning to Jura at intervals. Finally, the entire family, frustrated by so much time apart, left the island.

In all cases the rural teleworkers surveyed here have only been able to achieve a 'partial signing-on' (Star, 1991) to the standardised practices of external economic networks. It may also be noted that the ambiguity that marks their relationship with such exogenous forces also recurs in the relationships that they have forged with their local surroundings. Of the two teleworkers that remain, Roland belongs to an insular commune and has little dealings with the community on a social level. Andrew, who arrived with high expectations of a *gemeinschaft* existence, feels that he remains apart from the local community.

> I mean, I do what I want and go home and shut the door. In other places if you don't go out then people probably think you've died...I really don't think there is that strong a community spirit. I thought, when I came up before, I thought there would be, but I really don't think there is. And I've heard about people leaving... *Andrew*

Neither the work opportunities nor his lived experience of the locality have matched his original expectations.

7.3 Sleepers: the 'Rip Van Winkles' of telework

An older group now in their late forties and early fifties, Dave, Rob, Isla and Bill were originally part of a wider movement into rural Scotland identified by early counter-urbanisation researchers during the inter-census period of 1971-1981 (Champion, 1989). Generically, they can be regarded as being part of the 'counter-culture' or 'drop-outs' migration movement in Europe and North America, a drift that was 'people-led' rather than 'job-led' (Ardagh, 1982; Moseley, 1984). Idealistic in their outlook, they eschewed commuting in favour of what was intended to be a largely self-sufficient rural lifestyle, necessitating that any previous employment be permanently relinquished[10]. All admit that what mattered above all else, at the time,

was to be in a *rural* environment and that the precise latitude and longitude hardly mattered.

> A lot of people come to Argyll or anywhere in the Highlands. The main thought at the time was just deciding where you want to live and then how you actually make a living is secondary. When we came it was in a way just the late 70s thing, move out to the countryside and be self -sufficient, that was a big part of it. And thinking about money income was almost, well not really silly, but that sort of thing. 'We're going to be self-sufficient, we don't need money!' (*laughs*). It all seems a bit amusing now. *Rob*
>
> We were both, you know... typically cloud nine misty-eyed as you tend to be when you're younger. We'd spent good times hill walking and such. At that time John Seymour had just written 'Self-sufficiency' and an enormous number of people were looking into this self-sufficiency, and suddenly every ploughed acre with a ruin on it had become an absolute money-maker for the farmer who owned it... Lots of people would class us as, yes, there's someone who's got it out of 'The Good Life', left the rat race in London. When we first came we were paying £200 a month mortgage and I had no idea when I signed the forms where the money was going to come from. *Dave*

Now in his early fifties, Dave used to work in London as a French language translator for a firm specialising in industrial patents. The choice to leave the city and pursue self-sufficiency, made in his late twenties, ended this career while his wife abandoned her work in microbiology. Originally they aspired to live in Wales but found property there prohibitively expensive and a recommendation by Dave's parents brought them to Islay in 1974. Similarly, Rob and Isla migrated to Kintyre in 1978 with a strongly held conviction in the superior quality of life in a rural environment, irrespective of employment opportunities. Both had been academics based in the Midlands where he had trained accountants while she had lectured on statistics. Two years later Bill, who had worked in Computer-Aided Design (CAD) for a firm of hydraulic engineers, moved to Arran where his wife took up employment in the local secondary school while he considered his various employment options.

In each case the exact means of survival was unclear at the outset. As Rob comments, 'people often move, I suppose, with assumptions about how you make a living and once you're actually there in the spot it changes completely'. After 4 years, in a climate of rapidly rising inflation rates and mortgage payments, Dave opted to return to paid work on a regular basis, initially driving lorries. Rob and Isla started a B & B while Bill followed his wife into part-time teaching. All worked within the community in generally unremarkable roles until the late-1980s. Yet now they work with ICT on a daily basis. How was this outcome arrived at?

Working at the transport depot, for instance, led to a fresh encounter with computers for Dave. He previously had advanced experience of using IBM mainframes in the very early 1970s, working for a firm that designed automatic account data processing systems and he adapted quickly to using the early Windows operating system.

> I worked with computers back when they were things that you programmed by taking panels off the side and patched wires in... So then of course there was a long gap after that and I got back into them sort of in the very early days of Windows when DOS was really the main system, 9 years ago, at the depot. *Dave*

He now works for the same patent design firm in London that he originally left in 1974. Following closer European integration, rising demand for language translation work has allowed him to pick up again after such a long hiatus. Technical development has allowed remote work in this field to become possible, translating patent applications from French into English. In addition, he learned how to service the machines, valuing self-sufficiency on a remote island where equipment is excluded from 'mainland only' engineer call-out guarantees. As a result, he quickly gained a local reputation as an ICT 'problem solver' and was appointed manager of the Islay Community Teleservice Centre (see Chapter 5).

Rob and Isla also began to gravitate back towards their previous areas of expertise in teaching through local council-sponsored initiatives. Following three Summers surviving on the income from running their B & B and camping accommodation, Rob applied to teach accountancy night school classes in Campbeltown while Isla became involved with Open University statistics courses, both positions necessitating that they monitor the trend towards greater use of computer software packages. As the number of small businesses using computers for accounting developed locally, they found themselves increasingly being identified by their neighbours as a source of advice. No doubt the fact that they had, by then, lived in Kintyre for a decade helped them to reach this position of trust, in contrast to the more recent migrants profiled in the previous section.

> It was only about 3 years after we came I think we got to here someone wanted to put on an evening class on computing in Campbeltown so *we got pulled back into the world* of FE and teaching classes, that sort of thing. And [*to Isla*] were you getting some of the supply teaching or was that a bit later on? There was the distance learning, and some of the people from small businesses and you'd get questions like 'a computer might be useful in my business and can you advise me and so on?' And

> this gradually led on to starting up the actual computer business. *Rob* (emphasis added)

They eventually chose to legitimise this new role by establishing a business specialising in particular in business support and training and ICT has allowed them to extend their client base throughout the Western Isles. Rob has clients on the island of Colonsay which lies off the Kintyre coast, for instance, with whom he regularly conferences using ICT. Bill's history is very similar in many respects to that of Rob and Isla. Describing himself as a 'problem solver' with a background in engineering and CAD, in 1983 he purchased a VIC 20 machine and secured a teleworking contract designing time table information databases for public transport systems, a brief that he has retained over time. He too found himself increasingly cast in the role of ICT problem solver by a community that he was already well integrated into. He now has a registered business supplying and repairing PC hardware and software. More recently he is one of a handful of individuals on Arran who are attempting to spearhead the rejuvenation of the island's tourist-base through e-commerce (see Chapter 8).

7.3.1 Incomers still? Making do, mucking in

They have all have lived in rural Strathclyde long enough to become well integrated into community affairs. Dave's children, for instance, were born on the island and have passed through the local schools. All spent a period of 'making do and mucking in' (Allan and Gloyer, 1996) and, crucially, none attempted prematurely to assume the role of 'expert'. In their narratives, it is a role that the local community chose for them. All initially took up posts that they were certainly over-qualified for, symbolically stressing their willingness to 'fit in'. All describe their histories in terms of reluctance and of being 'pulled back' to a world of professional responsibility. In each case, local people identified them as potential problem-solvers with valued skills. As local catchments began to generate demand for PC supplies, training and advice, they accepted the role of supplier while simultaneously exploring the opportunity of re-visiting long-dormant careers through teleworking.

Critically, all of this has been achieved as 'insiders' who are no longer perceived to be incomers by their neighbours. Dave, in particular, maintains that this is crucial to

his 'success' on the island, in contrast with many other migrants whom he has seen arrive and depart.

> I've done lots of different jobs to survive. I've driven lorries, I know people, also I've never been part of the ex-pat community which is not because I don't want to know but I think that's more successful than regarding yourself as someone who's come to Islay from the outside. And I went into teleworking *not like a patch put in from the outside of Islay*, but I came into the island and then moved into teleworking. *Dave* (emphasis added)

Rob and Isla also perceive a stable and widely accepted role for themselves within the local community while they provide training and support over a much wider area. Neither they, nor Dave or Bill, particularly regard themselves as incomers any more.

Allan and Mooney (1998) have drawn attention to the porosity of the boundary between 'local 'and 'incomer' in ethnographic work conducted in rural Scotland, including mid-Argyll, specifically the village of Ardishaig. They note that boundaries are not based solely upon length of residence, and rarely are they clear cut. 'Local' status, they suggest, drawing on Allan and Gloyer (1996), has 'more to do with the assimilation of, rather than challenging, community practices' - the practice of 'mucking in' in everyday parlance.

Similarly in all the cases surveyed here, they have succeeded in integrating into island life initially by following Seymour's route to self-sufficiency to varying degrees. However, while achieving *gemeinschaft*, all belatedly realised the importance of money and have not resisted the forces that have returned them to a more professional occupation. Yet their attitude towards work, specifically a wilful refusal to optimise their new earning potential, alludes to the survival of the self-sufficiency motif that originally brought them to the countryside. Their primary loyalties remain with their local area networks and the actors that constitute them, not with external markets and money. An ethos of subsistence, with little care for surplus value, continues to inform their decision-making. Bill, in particular, prides himself on achieving self-sufficiency *through* teleworking and other sources. However, he is not interested in seeking any kind of financial support from the LEC to help diversify his business, preferring instead to uphold a 'historic' tradition of self-sufficiency.

> I owe nothing to nobody. I don't have grants, I don't apply for business help start-ups or enterprise. I just do my own thing in the old historic kind of crofting type manner! Some people I see describe what I do as sort of techno-crofting, I just don't have a field. *Bill*

7.4 When technology leads: the reluctant teleworker

An independent financial advisor who operates working from home, Mike provides financial advice for small businesses and individuals. The bulk of his work consists of providing recommendations for pension investments. Although he may be classed as a teleworker, his situation is rather different from the other cases reviewed here. He had already established a business on the island and was subsequently forced by extraneous forces to integrate the use of ICT into his daily working practices. Although he chose to migrate to the island, he has not become a teleworker by choice but by necessity.

A frequent visitor to the island, Mike migrated to Arran in 1988. This is a common pattern[11] amongst English incomers, who have spent their summers on the island and often profess a desire to permanently relocate. With a proper motive force applied, some of these holiday-makers do, as in Mike's case, make the move. He was made redundant from his firm in London in his mid-40s and took the opportunity to set up his own business on Arran, having identified a potential market for his services.

> And I had to sit in a middle-aged crisis and look a around and see what I wanted to do. It took a year, but the process started then, do something different. 'What will I do?' – 'I don't know, why don't you give people investment advice you're quite good at that.' – 'Oh, what a good idea'. I'd been paid to do something vaguely related for 25 years so I was not a novice. *Mike*

About half of his clients live on the island and the rest are mostly close by in west Scotland. Increasingly, he is getting new business in England through personal recommendations that can necessitate his making one or two work-related off-island visits per year. Ease of conducting such long-distance work has been a real benefit of the initially enforced use of ICT being added to his working practices. In 1994 several major insurance firms embarked on a joint venture to eliminate the high costs of mailing illustrations to field agents. Consequently, they developed an email-based software package called 'The Exchange' which required field agents to purchase a PC. 'The essential motive force was "oh my God, without this I'm not going to be able to do my job any more",' Mike explains. In theory, field agents benefit through receiving a slightly higher commission on work conducted in this way. However, the greatest savings were clearly for the insurance offices, calling to mind the post-Fordist critique of informationalism (see section 2.12).

Where Mike has accepted and adopted ICT into his working practices it has always followed from necessity. While he is pleased with the benefits of his investment – recently he has retained a client who has emigrated to New Zealand with whom he corresponds via email - he does not seek to optimise his use of the new resources that are at his disposal.

> I've got a fairly advanced box. I'm sure I could make it jump through all kind of hoops whose very existence I'm unaware of because I can't be bothered reading the guide book. Like most people who have electrical gadgets for one particular purpose, they're not interested in the other 19 things it could do for them. When my grandchildren are of an age to tinker with it doubtless they will say 'gosh, granddad, didn't you know it could do this?' and I shall say ' well I was waiting for you to teach me,' with that wise old smile that grandfathers can do. *Mike*

Mike's case is unique amongst those surveyed. No other individual was forced to integrate ICT into their working practices for fear of losing their livelihood and he claims that he will only adopt further teleworking practices when necessity arises. Yet there is commonality with the other cases because of, once again, satisficer attitudes. Mike was not actively seeking to maximise his business revenues and would not, he claims, have willingly adopted the use of ICT without the imposition of a suitably strong and externally applied motivational force.

7.5 Collective experience - an analysis

The following generalisations can be drawn from the collective experiences of the group as expressed in their personal biographies:

- All have acted upon a long-standing desire to re-locate to a rural environment.
- Most have proved to be highly adaptive to their local surroundings.
- 'Successful' teleworking migrants have acted to utilise contacts located beyond their immediate travel-to-work area (TWA) that were made prior to their relocation.
- All teleworkers have struggled to develop *new* contacts outside their TWA. They believe that efforts to extend their existing networks are greatly hindered by remoteness on account of the importance of face-to-face interaction in the early stages of a working relationship.

- Most teleworkers have a shared history of being perceived as potential 'problem solvers' by neighbours, particularly in the early part of the 1990s when ICT was becoming more common-place and easily-affordable.
- Several teleworkers have subsequently discovered that the emerging local market for computer hardware and software provides a more immediate source of revenue. Some have willingly adopted a local servicing role, quite contrary to the more ambitious 'conduit work' that they originally had in mind. However, competition has resulted where more then one supply firm have been established in close proximity to one another.
- Most teleworkers share a work pattern of drawing income from various disparate sources as they cannot make sufficient income from either their remote work (too few contacts) or local service provision (too much competition in relation to the local catchment size).
- Older migrants are more socially secure, having moved beyond incomer status and only adopting the use of ICT latterly. Generally, they have been invited to adopt the role of 'problem solver' by the wider community. They identify strongly with the locality and exhibit 'satisficer' attitudes, in harmony with the ethos of self-sufficiency that informed their original decision to relocate.
- Recent migrants have a more ambiguous relationship with their local community, having had less time to assimilate. However, having relocated specifically to telework they are more ambitious economically and are unlikely to stay indefinitely should they feel that they are financially at risk.

7.5.1 Role-playing

This analysis has focused upon the ways in which teleworkers have attempted to articulate themselves with external circuits of consumption and production. The extent to which this constitutes an articulation of a *locality* – as opposed to an elite group of individuals –with global flows will be returned to in Chapter 9. The remainder of this chapter explores how technology has acted in unanticipated ways, failing at times to create new remote working opportunities while simultaneously providing a more locally-based income for some migrants. In turn, the users of this technology sometimes act unexpectedly too, often by wilfully refusing to optimise their market potential either locally or externally.

The earlier wave of migrants, finding that they could not sustain their intended self-sufficient lifestyle, have resumed their previous careers, while also assuming the role of local 'experts', as new innovations in ICT have become available. In contrast, more recent arrivals have, without exception, been unable to perform as they had hoped and have either departed or substantially re-appraised their own role within the local community. Most have experienced centripetal forces, with their attentions directed inwards towards the locale, and not outwards as they have struggled to maintain or develop external linkages.

Both migrants and ICT are thus re-figured *in situ*, a key proposition of Actor Network Theory. The attempts of migrants to position themselves with a foothold in both local and 'global' networks, either belatedly in the case of the earlier migrants or more immediately in the case of the later arrivals, clearly require careful analysis. What is notable about all of these attempts to mesh *gemeinschaft* with a more extensive economic network is the range of ambiguous positions and the 'partial signings-on' (Star, 1991) that result in relation to:

1. informationalism (specifically, to the maxims of enterprise culture).
2. rurality (specifically, to a set of propositions relating to notions of place, belonging and community).

Informationalism and entrepreneurial activity

The teleworkers encountered here are much more Leftish than the stereotypical postmodern 'consumer' of the British countryside often encountered in rural literature, particularly the older cohort. The findings here are certainly not symptomatic of the 'white, Tory, Christian complexion' so assiduously described by Murdoch and Day's (1998) appraisal of counterurbanisation in the rural south-east of England. While the rural idyll is often presented as a conservative force in contemporary critiques, given its strong associations with nationalism (Rose, 1995) and often ethnic exclusivity (Kinsman, 1995), there has always been a very strong Leftish version of the rural idyll which lays claim to the proto-industrial[12] tradition, prior to capitalism proper.

Oakley (1974), for instance, describes a 'golden age' of gender relations prior to the hand-in-hand advancement of patriarchy and urban capitalism theorised by Engels in *The Origin of the Family, Private Property and the State*[13]. Across the political

spectrum the sense of place associated with the rural idyll is inextricably linked in the realm of imagination with more egalitarian social relations. Such sentiments frame the practice of rural telework as they did the countercultural movements of the 1960s. The satisficer attitudes encountered here - the reluctance to pursue excess profit simply for the sake of it, the proud assumption of self-sufficiency augmented through 'piece work' - are especially strong themes in the biographies of the older teleworking migrants. The more recent incomers may have more in common with the typical 'home counties' migrant described by Murdoch and Day (1998). However, both Andrew and Roland have willingly re-orientated themselves to fit in with the needs of the local community, adopting a role quite contrary to their original ambitions.

Rurality, longing and belonging

The experiences of the migrants here relate closely to Berry's (1976) original discussion of counterurbanisation, developed in a US context which was rooted in the culturalist explanation that small-town rural environments were what ordinary people aspire to[14]. Yet the nature of telework means that the work need not be conducted from *within,* or on behalf of, a wider local community. This is not the holistic idyll of place and belonging suggested by Heidegger's famous 'black forest' treatise (Heidegger, 1967; see also Harvey, 1993a). A wider economic network is essential for successful teleworking requiring a more porous sense of place allied with a 'flexible' rurality serving as the technological frame for interaction[15]. In other contexts, Cloke and Goodwin (1992) have also argued that the rural idyll is often reproduced but in an iconic form wherein rural 'values' are marketed as a specific and generally problem-free commodity. Their conceptualisation of such a sanitised sense of rurality sits well with the ambiguous nature of rural telework identified here, namely the simultaneity of existing within the rural while conducting economic transactions across a much wider network.

This form of rural idyll, as it is practised and in turn informs the actions of others, is a representation which is strongly associated with sections of the middle class (Philo, 1992; Murdoch and Marsden, 1994; Cloke and Little, 1997). Murdoch and Day (1998) refer to Lowenthal's adage that such people long for 'memory with the pain taken out', with treasured places often resonating with romanticised notions of 'community'. Again, the notion of rural telework, by potentially allowing high

economic returns to be achieved while residing within a travel-to-work area with an impoverished local labour market, sits well with Cloke and Goodwin's (1992) critique of the sanitised idyll that suits an affluent class of consumers. Murdoch and Day (1998, 197) argue that the 'new traditionalist' rural community is founded on 'the attempt to create a distance between affluent living environments and the world of flows'. The countryside is the place where such distance is felt most keenly, although it is only symbolic because, in reality, while maintaining their own 'retreats' these consumers are embedded in much wider, and profitable, regional and sub-regional networks (*ibid.*, 196).

Ethnographic studies have repeatedly shown that newer residents prize such 'authentic' natural qualities of the rural (Bell, 1994; Cloke, Goodwin and Milbourne, 1998) and increasingly even urban 'village' environments (May, 1994; 1996). For this reason, resident groups are therefore often extremely pro-active in blocking development.[16] For middle-class incomers, 'rural life means life in a community; and if no community exists, it will be created, as incomers weave together the old with the new into a hybrid rurality, defined in such a way as to exclude all the pernicious effects of the urban modern world, such as anonymity, crime, noise and so on' (Murdoch and Day, 1998, 193). Recently-formed social groupings in many rural environments therefore differ from 'true' *gemeinschaft* communities, as Halfacree (1998) suggests, by being something which must be created[17] rather than something one is born into.

7.6 Changing networks, changing ruralities

As Chapters 3 and 4 showed, there are clear structural influences at work in the region but these cannot, in themselves, *explain* the breadth of experiences that have been documented here. An early wave of 'people-led' migration, motivated on aesthetic grounds, brought incomers to the region who initially practised self-sufficiency. Only later did they begin to consider ways of generating a sustainable income; the subsequent arrival of fax machines and modems was entirely serendipitous. Notably, the ease with which they have all, over time, adopted additional new roles as local service-providers reflects the trust invested in their 'problem-solving' abilities by the wider community following a period of time spent 'mucking in and making do'.

In contrast, newer arrivals have brought ICT with them, in each instance travelling as a previously established socio-technical ensemble (Bijker, 1995a). Initially, all attempted to insert themselves into their local area networks socially *but not economically*. Failure in all instances to sustain a full-time income through remote working led two to depart the region while the remaining two have, belatedly, begun to provide local support services, in common with the older group. Andrew, in particular, now describes a hybrid rurality as a result of these pressures. It is an *outcome* of the 'cyborg' network that he has constructed around himself, part local and part global. Economically and socially he exhibits a 'partial signing-on' to both local and global circuits but is not convinced that he has a sustainable existence in either domain.

Where there is evidence of Strathclyde's teleworkers successfully 'signing-on' to external networks, it begs the question *does this actually constitute the linking of local and extra-local circuits*? 'Successful' teleworkers are not necessarily serving as conduits for a genuine extension of their local area networks – they might instead be regarded as metropolitan 'satellites'. Indeed, it is notable that the part-time teleworkers who responded to the advertisements placed in the local press were precisely the ones with the greatest amount of interest in community development. Several have been highly active with community-based projects such as the CTC on Islay. A couple of others teleworkers, whose existence was uncovered during the course of the research but could not be interviewed (see section 4.1.1), were far more reclusive – and perhaps successful! Does their presence contribute to the well being of the community in any way? This important issue is returned to in Chapter 9.

Notes

[1] Interest in the idea of telework first arose during the oil crisis of 1973-4 when Jack M. Nilles suggested that information technology could potentially facilitate electronically mediated distance working, substituting electronic communications for physical travel. He claims that 'the Great American Dream is to live in a suburban setting at some little distance from the neighbours. The automobile provided this option, and cities changed as a consequence. Today microelectronics technology is beginning to do the same for information workers... While telework - the use of computers as a primary communications tool in the workplace - can be conducted from a centralised location just as easily as from a decentralised one, telecommuting implies decentralisation' (Nilles, 1985, 202).

[2] Teleworking discourse is often technologically deterministic in its outlook. Perhaps that is unsurprising given that the much of the literature is found in Business Studies and Economics, where emphasis is placed on 'time-saving' and 'productivity-increase' aspects of the activity, ushered in by technological advancement (Giulano, 1985; Nilles, 1985).

[3] In a further series of definitions based upon the nature of the work-space itself (or lack of it) Qvortrup (1993) organises telework –defined as electronically mediated work-related interactions across distance - into five categories. *Electronic Homework* is based entirely in the worker's home while *Shared-Facility Centres*, *Satellite Work-Centres* and *Private Enterprise Centres* all involve some degree of collectivisation, either of workers from different firms or a single employer. The Bowmore telecottage explored in Chapter 6 is an example of such a centre. The fifth category is termed *Flexible Work Arrangements*, and holds distance workers who are highly mobile using portable equipment.

[4] While Huws *et al.* neatly categorise telework they are unable to give any reliable estimates of its actual extent in the UK. National estimates of the total number of teleworkers in both rural and suburban areas vary wildly from 200,000 to British Telecom's figure of 3.7 million (Uhlig, 1996). The Telework, Telecottage and Telecentre Association puts the figure at 630,000 (*Teleworker*, 1997).

[5] As Champion (1992) has noted, migration is a chaotic conception, not easily modelled and certainly not one which can be satisfactorily explained away with a study of only eight individuals and their partners.

[6] This is a term used by Cloke *et al.*, (1998a). Difficulties in explaining trends have in the past led migration studies to be empirical, possibly at the expense of theorisation (Boyle & Halfacree, 1998; White and Jackson, 1995), leading some theorists to suggest that it is best studied as a 'biographical' experience (Halfacree & Boyle, 1993). Instead of viewing migration as goal-directed or purposive behaviour, the biographical approach emphasises its broader location within any individual's entire biography, seeking to demonstrate 'the complexity of the seemingly simple act of migration and its embeddedness within the everyday context of daily life for those involved' (Halfacree and Boyle, 1998, 2).

[7] The fourth category is most ambiguous. Many small businesses have introduced word-processing and accountancy tool on stand-alone PCs over the last decades. Increasingly many will adopt email and some degree of business use is likely. Does that constitute telework? Not if the technology merely makes an existing practice (such as booking) more efficient, for the purposes of this study. Also, in reality the distinction between a 'native' islander or an 'incomer' may be tenuous. 3rd way concerns are as applicable as they are to the children of first-generation migrants as they are to older families.

[8] Specific precipitating factors, such as the urban unrest of 1980, combined with the powerful mobilisation of participants for action through 'rural' literatures such as *Country Life* magazine also has an effect at this broad macro level.

[9] The term 'millennial' rurality is borrowed from the title of a conference session at the 1999 Annual Conference of the Royal Geographical Society and the Institute of British Geographers, University of Leicester, January 4-7.

[10] Castells (1996) suggests that the ecological dream of quasi-rural communes has, for now, been pushed away to counter-cultural marginality by the historical tide of megacity development. Despite social and environmental problems megacities look set to continue growing, both in size and in attractiveness for high-level functions. This is because megacities are centres of economic, technological and social dynamism, their respective counties' development engines.

[11] This is a personal assertion based on my knowledge of the island community, rooted in some thirty years' worth of observation!

[12] The geography of rural telework invites direct comparison with that historical phase of capitalism which Mendels (1972) terms proto-industrialisation. The proto-industrial society and economy of 1650-1800 is described as a prelude to industrialisation proper when family-based units of production worked at home but were linked to the pulse of national and international markets by the putting-out system. Piece-work complemented the rural subsistence economy, supplementing incomes and providing employment in the fallow season. By fostering a return to such a mode of production, rendering the urban factory-based mode of settlement obsolete, rural telework becomes symptomatic of the unpicking of the geography of modernity and the social relations located there

[13] Significantly, Winston Smith longs to spend time in the country with Julia in Orwell's *1984*. In the absence of easily discernible hierarchies of the urban corporate power associated with high capitalism it is easier to perceive society to be more egalitarian and meritocratic than it actually is

[14] In contrast much early work on decentralisation in the UK (Massey, 1979, 1984) adopted a materialist explanation rooted in the logic of capital accumulation as people followed capital which had fled the core.

[15] The concept of rurality both informs the construction of these networks and is *in turn is an emergent property* of the networks that the migrants attempt to shape, a theme which is examined in greater depth in Chapter 9. This classic notion of the 'rural idyll' which informs the conception of rural telework has received a great deal of attention in cultural studies of landscape, given the interest in the social constructions of rurality and of nature that has been fostered by postmodernism (Short, 1991). In rural geography this interest has frequently translated into a material concern with the use of rural Britain as a space of consumption related to the growth in heritage sites.

[16] On Arran there was notable opposition to the original plans to develop a distillery at Lochranza although such objections were over-turned. Ironically, it was suggested by the protest committee that a distillery would not be 'in keeping' with the character of the village, Lochranza. This illustrates the various scales at which rural 'mythologies' can be maintained given the strong association that exists between rural Scotland en masse and whisky production. Viewed in the wider context, who could object?

[17] Cloke, Phillips and Thrift (1998) highlight the complexities of understanding how the concept of rurality operates for English migrants in Wales, making the interesting point that English settlers recreate their imagined English rural idyll in Wales. This is partly due to choice and partly due to constraints, with incomers lacking the cultural competence to follow any other path, necessitating other survival strategies, a fact that is quickly detected by other residents. Andrew's situation certainly has much in common with these observations.

'Scotland in miniature'? Arran, the Net and the politics of representation

Chapter outline

The introduction of ICT to Arran has been framed by a perceived 'crisis' in tourism. In the current climate, the Internet is perceived to be a valuable marketing resource - a 'fix' of sorts to this crisis - by some local actors. However, there is conflict over the *manner of representation* of the island achieved through this new medium. The model of development which is espoused by 'formal' regional agencies has been challenged by informal actors, at times reflecting a more deep-set dissatisfaction with the recent re-organisation of local government structures. The Internet grants private citizens and NGOs greater power to challenge official actions and to promote alternative development strategies by 'jumping scale'. However, it is argued that such action is not necessarily synonymous with greater democratisation of local decision-making processes and is actually indicative of a failure of local governance structures to use new technologies to become more politically inclusive and accountable. The paradoxical nature of the Internet is further highlighted, as it is shown to simultaneously bolster and weaken local business confidence as hopes of rejuvenation of the tourist sector are counterbalanced by fears of 'leakage' to other areas of Scotland.

8.1 Resistance and ICT

In this, the last of the four 'micro' studies, technology is examined in an overtly oppositional context. Previous stories involving the interaction between formal and informal agencies - the Bowmore CTC (Chapter 5) and Argyll's primary schools (Chapter 6) - have focused upon the mediation of interpretative flexibility within private-public partnerships. This chapter looks instead at the use of the Internet by private citizens to rejuvenate a flagging tourist economy but in a manner that also sets out to mount a direct challenge to existing governance structures in the Isle of Arran. It will be shown that this is achieved by contesting the 'official' mode of representation of the island in cyberspace and the ways in which it is presented as a site of consumption for tourists. Following the study's aims (Table 1.1), particular attention is paid both to the differential power of certain local actors to affect outcomes and also to the ways in which notions of rurality have framed their actions.

The potential of advanced technologies to operate as a 'counter-hegemonic' medium has long been recognised[1] and Marshall McLuhan was acknowledging the libertarian potential of the burgeoning communications industry as early as the 1950s. Examining the contribution technology might make to the continuing 'age of reason', he believed that technology always contains possibilities for emancipation as well as domination (McLuhan, 1967). It is, for instance, widely recognised that the Internet has been used progressively in some states with a poor human rights record such as Indonesia. Notably, China[2] and Burma have recently attempted to introduce more stringent controls on Internet use for political purposes (*Guardian,* 2000). However, as the value of e-commerce has grown, those 'hackers' who take an anti-capitalist stance and undermine the security protocols of large corporations are increasingly characterised as a deviant threat to the norms of a functional society. The World Wide Web is a complex and highly contested political arena, and the representation and control of place, as achieved through the use of such electronic media, is becoming a discipline-wide concern for geographers (Brunn and Cottle, 1997; Jackson and Purcell, 1997; Loader, 1997; Warf and Grime, 1997; Kitchin, 1998; Gibson, 1999).

Interest in the topic certainly relates to the manifest uncertainties concerning power and place which follow from the alleged loss of local distinctiveness in the face of globalising technologies (Keith and Pile, 1993; Bird *et al.*, 1993) and the emergence of new 'hybrid' geographical formations and imaginations (Massey, 1993; Jackson, 1999). The theme of resistance - the opening up of new possibilities and new spaces for previously marginalised or disenfranchised groups – is a defining characteristic of the new paradigm in cultural geography (Cresswell, 1993; Pile and Keith, 1997), drawning extensively upon the work of cultural theorists such as bell hooks (1990, 1994) and Haraway (1992, 1997). This notion of *resistance* - in relation to established power relations - can be modelled in many ways. A key difference between competing academic constructions of power is whether it already resides in structures or is an emergent property of new networks (see section 2.2.4). This debate is especially pertinent to the uses of the Internet that can, on the one hand, be presented as a 'propaganda' tool that is deployed in ways which simply reflect pre-existing degrees of empowerment. However, it may also be argued that new power relations develop in the realm of cyberspace.

8.1.1 Ideology and the Internet

Brunn and Cottle (1997) have analysed the practice of 'cyberboosterism' by small states, examining how they 'manage' their appearance in cyberspace. Some sites may simply provide information such as timetables and telephone numbers for local communities, in the way that France's Minitab system was originally conceived. However, they may also be overtly self-promotional for investment purposes and tourism. When this is the case, such self-promotion, as it occurs in cyberspace, will be marked by an attempt to portray something unique about the locality in question. This is 'essential in a competitive global marketplace of new products and new consumers' (*ibid.*, 242).

Questions therefore arise about whose perception of people and place appears in cyberspace. A state might present its population in its diversity or merely focus upon the interests of an elite group (this is especially pertinent in the case of many LEDCs). Valued images may be drawn from the past and given priority over more accurate presentations of the present, while physical landscape features may be allowed to dominate over cultural details (so often still the case in the promotion of South Africa as a tourist destination). These questions – who, what, where - are equally valid when posed at the local scale of enquiry. Of course, the same issues are just as pertinent to the representation of place in other media such as literature or television. However, because the nature of cyberspace allows the rapid dissemination of 'identity' information anywhere, instantly, the *mandate* to make knowledge-claims about a place needs to be far more closely interrogated (Brunn and Cottle, 1997). Relatively low fixed capital costs are incurred by the purchase of a PC in comparison to, say, a printing press. 'Anything goes' thus seems to be a reasonable maxim and web sites that purport to represent a place call into question exactly *whose* sense of place it is that is being converted from a 'grounded' reality into a virtual and artificial construct.

Warf and Grimes (1997) have examined the politics of the Net in terms of the concept of counter-hegemonic discourse. Following Henri Lefebvre, they note that the Internet is both a representational space and a representation of space. Because all representations reflect vested interests, there can be no value-free, apolitical discourse, electronic or otherwise (Lefebvre, 1991). The ability to communicate intersubjective knowledge is a powerful counterhegemonic use of the Internet according to Warf and Grimes (1997). People from different places are able to convey a notion of what it is like to live their lives. Information is available

Feedback	Are contact details given, such as an email address?
Multiple Cues	Are maps, photographs, type fonts, audio clips and graphics used in a polished or finished way?
Natural language	Is the focus personal / conversational or formal and 'encyclopaedic'?
Personal focus	Are there links to other sites, or is the user held captive? Are emotions conveyed and if so how strongly?

Table 8.1 Questioning the guarantees of Internet authenticity
Source: Jackson & Purcell (1997, 224)

about places and the people that live there which is not controlled by 'expert' gatekeepers, as with the printed press, but by indigenous people themselves. Knowledge and power are inseparable, and the information placed on the Internet can be politically progressive or reactionary (Froehling, 1997). Castells (1997b) considers the possibility for mounting oppositional politics, particularly through symbolic and issue-orientated mobilisations, to be one of the more positive aspects of informationalism.

Where competing visions of place are available on the Internet, some may appear to have greater 'authority' than others. Jackson and Purcell, in an analysis of Web representations of the former Yugoslavia, argue that the Internet is employed by rival designers, using Hypertext Markup Language (HTML)[3], to provide competing visions of space that aim to accomplish social, economic and political ends. They are concerned with understanding more clearly 'how one perspective is made to seem more correct' when competing sites offer multiple perspectives of a single place. Claims to power, authority and truth are made upon the basis of the resources that are placed in hyperspace. Following this 'social shaping' approach, they analyse the ways in which technology lets us 'know' a place, and examine the strategies that web designers use to guarantee an aura of 'authenticity' (Table 8.1).

8.1.2 Contested terrain: the location of power

Warf and Grimes describe cyberspace as 'contested terrain, a battleground of discourses'. Where the Gramscian conception of power that they subscribe to differs

from the dual approaches of Social Construction Of Technology (SCOT) and Actor Network Theory (ANT) - which have been adhered to in earlier chapters - is in the supposition that power blocs, and their rivals, exist *in situ* and prior to the interaction around an artefact such as the Internet. Opposing armies, consisting perhaps of Mosca or Pareto's 'power elite' are pitched in battle against the opposing rebels, scrabbling wildly for whatever weapons may come to reach. However, the argument adhered to in previous chapters has been that it is only through interaction with the material world that interests, parties and politics become fully aligned. Embryonic allegiances may be cemented or undermined as they work through a technology such as the Internet.

Hall (1987) makes similar concessions to the importance of context and of contingency in a discussion of ideological formation which draws in equal parts from Gramsci and Foucault, although his analysis neglects the importance of the non-human world which is so useful to ANT. Class interests, class position and material factors, according to Hall, are all useful starting points in the analysis of ideological formation, but they are not sufficient to account for the movement of ideas in real societies. Structures alone cannot explain ideological formation[4]. Discursive formations 'formulate' their own objects of knowledge and their own subjects. They have their own repertoire of concepts and establish through their regularities a 'space of formation' in which certain statements can be enunciated.

Warf and Grimes (1997, 270) note in passing that the Internet does not guarantee the emergence of counter-hegemonic discourses, but it does facilitate 'the opening of discursive spaces within which they may be formulated'. Here they hint that ideology can emerge *from* networks such as the Internet, and should not entirely be taken as a pre-existing given. The Web is far more than a realm of imagery, or a context for the definition and conveyance of existing dominant or sub-dominant conceptions of place (Jackson and Purcell, 1997, 219). The power that guarantees 'authenticity' is an emergent property of the Internet itself and of its textures, its authoring tools and its search engines. Legitimate statutory bodies such as Area Tourist Boards or Governmental organisations may discover that their portrayal of place cannot achieve dominance in cyberspace. Informal actors and NGOs may develop more effective techniques of enrolment, leading to the formation of new power structures. In particular non-officially sanctioned sites may come to appear in a more prominent position on the Internet. If the authors are skilled enough, they will submit details that

will ensure the dominance of their site to search engines such as *Lycos* or *Alta Vista*. All of these issues are now illustrated in Arran in the arena of tourism promotion.

8.2 Tourism on Arran

Tourism is one of Scotland's main industries, generating a total income of over £2.5 billion and employing 177,000 people (Scottish Tourist Board, 1999). The majority of tourism businesses - some 16,000 in total - are members of one of the 14 Area Tourist Boards (ATBs) which have traditionally provided the only focus for tourism marketing and visitor services at a local level, via a network of 150 Tourist Information Centres (TICs). Arran comes under the jurisdiction of the Arran and Ayrshire Tourist Board (AATB). The ATBs are statutory bodies set up by the government and funded by the local council and by the subscriptions of their members, namely the proprietors of local tourist businesses. They are the only statutory bodies in Scotland which are not guaranteed funding by central government. Local Enterprise Companies and Local Authorities work in partnership with Area Tourist Boards and, at a regional and national level, with agencies such as Highlands and Islands Enterprise (HIE), reflecting tourism's vital contribution to the Scottish economy. The extensive TIC network currently handles over 10 million enquiries each year (Scottish Tourist Board, 1999).

8.2.1 Scottish Tourism and the Internet: gateways to Arran

Various sites now attempt to promote Scottish tourism, as displayed in Table 8.1. Some are commercially sponsored, such as publisher D. C. Thompson's *Scotland Online,* while others are state-funded, such as *Scottish Tourism*. They are all potential 'gateways' to Arran, providing routes for the *downward displacement* of the consumer – this is the geography of e-commerce. These virtual 'national' spaces hope to direct the consumer – and his or her capital - to a real locale such as Arran by providing contact details for sub-regions and localities throughout Scotland. Links are given, in particular, to regional agencies such as the tourist boards and, more directly, to individual catering establishments. Visitors may choose a single holiday destination or design a customised touring package for themselves. The STB web-site currently receives 10,000 visitors each week and this will undoubtedly grow in importance as more people gain access to this communication medium.

Growth in e-commerce is being spearheaded in particular by Scottish Tourism. For instance, Highlands of Scotland Tourist Board (HOST) claims to receive 500,000 hits per month. Notably, it produced only 700,000 printed brochures in 1999[5] (*Herald*, 1999a). Scottish Tourism has recently launched Project Ossian in an attempt to increase on-line efficiency and, it appears, to promote closer integration between sub-regions that would facilitate remote planning of touring holidays. Ossian is described as 'the world's first electronic, customer focused, Personal Host system' (Scottish Tourist Board, 1999). The prime objective of Ossian is to provide customers with readily accessible Scottish tourism products and services.

At the core of Ossian is a single database that holds comprehensive information that is maintained by Scotland's Tourist Board network. This information is made available to customers globally through a number of access points including the Internet, Tourist Information Centres, Web TV, kiosks, cable and digital services. Supporting the database is an e-commerce system that enables the customer to purchase on line using their credit/debit card. A customer database aims to capture customer details for 'greater future marketing precision' (*ibid.*). Ossian, it is hoped, 'will open up opportunities for new, e-commerce driven, revenue streams' by attempting to 'intimately personalise information and service provision, transforming traditional tourism marketing approaches' (*ibid.*). STB's goal is to lift substantially the £2.5 billion annual revenue within the next 5 years and ensure competitive advantage in the global electronic marketplace[6].

The trend towards promoting Scotland as a 'brand' via schemes such as Project Ossian at once opens Arran to wider markets by providing new tourist gateways. However, it simultaneously places the island in a more competitive global advertising environment. Whether Arran will be easily located in cyberspace is a key issue which arises in the narratives of the lead actors followed in this chapter. Some are certainly less optimistic than others with regard to Arran's ability to 'flag down' traffic:

> I mean, how do people think 'I want to go to Arran' in the first place? How does that thought come into somebody's head, if they don't have a relative there or they don't know Scotland in some sort of form? And to know that it's a nice place to go to. So how do they come up with that? And unless you have that initial thought, then why do you want to know about the hotels? *Elma (NAC)*

> I'm confident that people will come, that people will stumble on us just as much as they stumble on Loch Lomond. Arran's got quite a high profile name as you know, Arran is probably the most committed-to-tourism island in Scotland. Skye's got the name but Arran's got more. *Charles (AATB)*

8.2.2 Mini-revolutions and wet summers

While marketing initiatives delivered through the Internet at the national level affect the relations that Arran develops with external interests as a site of consumption, so too do governmental changes at the sub-regional level, especially those pertaining to the region of North Ayrshire of which Arran is, ostensibly, a part. When local government was significantly restructured in Scotland in 1996 the area tourist boards were also rationalised, leading to the merger of the existing Arran Tourist Board with the rest of Ayrshire. The resulting Ayrshire and Arran Tourist Board (AATB) covers the area of Arran, Cumbrae and Ayrshire (North Ayrshire Council covers Arran, Cumbrae and the North of Ayrshire). The AATB board is made up of 6 officers, 2 drawn from each from each of the 3 sub-regions, in addition to representatives drawn from the 2 enterprise companies which cover the area.

Having previously been served by their own tourist board, based at the tourist information centre (TIC) in Brodick, some Arran residents are clearly opposed to the merger. In particular, they oppose the way in which Arran is promoted as a place to visit *within* the wider environs of North Ayrshire, rather than as a destination in its own right. It is feared that this might encourage holiday-makers to visit Arran as part of a touring itinerary, thereby reducing hours spent on the island. The new tourist board is also keen to foster more 'short break' visits to North Ayrshire which require the provision of wet-weather, year-round entertainment. Both trends run contrary to the experiences of Arran islanders who have traditionally catered for long-stay visitors over the summer months. Editorials and letters published in the *Arran Banner* during the period 1996-1999 register local doubt about the wisdom of this move and the effectiveness of the new board.

Towards the end of summer in 1998 the *Arran Banner* (1998a) ran an editorial beginning with the ominous words 'this is a bad summer'. Noting in passing the effects of the wet weather, the strong pound and the World Cup as possible contributing factors, the editorial moved swiftly to the Ayrshire and Arran Tourist Board as a cause which 'is closer to home and therefore more kickable'. Citing the Board's failure to pay for its own subscription to the newspaper as an example of 'the shambles they must be in', the leader concluded that:

> This lack of effectiveness may, sooner or later, mean it has no satisfactory function and common sense will dictate that only an Arran tourist board might be able to

promote Arran and have the right attitude to help Arran's visitors when they arrive (*Arran Banner*, 1998a)

Continuing to 'kick' the board, a subsequent article stated that:

> When the tourist boards in Scotland were rationalised in 1996, the Ayrshire and Arran Tourist Board came into being. The feeling on Arran has always been that Arran is served best by a board which treats it as a distinctive place to visit, rather than merely lumping it with other parts of Western Scotland to gain from the dubious economies of scale which that might supposedly bring. (*Arran Banner*, 1998b)

At the first open meeting of the Arran Tourism Council (open to AATB tourist board members resident on the island and chaired by the island's two AATB representatives) strong opposition was mounted, in particular, to the practice of including Arran's tourist facilities in a brochure which covers the entire Ayrshire-Arran region. The members made it clear that they wanted one brochure which tells potential holiday-makers about Arran, how to get there and where to stay if they decide to come. Opposition to the AATB is such that the tourist board has experienced difficulty staffing Arran's TIC. In an interview with the *Arran Banner*, one tourist board representative stated that there had been so much 'backchat' that young people on the island did not want to work in the TIC because they might be 'looked upon as a fool' (*Arran Banner*, 1998c). They received only two responses to their advertisement for staff, which is surprising given that the island has a serious seasonal employment problem as a result of its 'traditional' model of tourism.

This last fact 'caused anger, and some took to miscalling' when it was reported at the meeting according to the *Arran Banner's* correspondent. It was further reported that the board was £107,000 in deficit, and that they did not expect be 'back in the black' until 2001[7]. A deep sense of local dissatisfaction with the new governance structure quickly led to the resignation of the original two local representatives for the island and interviews with Arran residents confirm that these events are regarded as nothing less then a 'revolution' locally[8].

> The tourist board has had a bit of a revolution in the last 2 years the result of which is that Arran has nose-dived and there's been a mini-revolution. The whole thing's been taken out of Arran and put into Ayrshire. And it is not what people on the island want, so they kicked out their representatives from the Ayrshire and Arran board and put in people who think exactly the same... I doubt if they will ever get back to the happy position they were in, but it is absurd... The ideal is for a tourist brochure for the island which all the hotels and B &Bs are in but that isn't how it works now, you've got to wade through all of Ayrshire and Arran and people in the South of England don't know the difference. *Hugh*

Key to local concerns is the idea that people outside Scotland - in 'the South of England' for instance - may not appreciate Arran's uniqueness if information is not presented to them in an appropriate way. At a time when so many Web sites strive to present Scotland as a whole, it is therefore notable that the islanders have developed 'informal' sites themselves that present Arran as an entirely independent and discrete entity. The two most prominent sites, *Arran-online* (Figure 8.1) and *Arran.uk.com* (Figure 8.2) actually pre-date the AATB version (Figures 8.3 and 8.4), but both were established following the tourist board merger. When discussing their motivation, the proprietors of the sites are not apparently particularly interested in making a great profit. They see their principal role as providers of a missing element of infrastructure that is appropriate and necessary to the maintenance of an understood way of life on the island. Neither Bill, the designer of *Arran.uk.com* (previously profiled in Chapter 7), nor Hugh, the designer of *Arran-online,* anticipated making a profit at the outset.

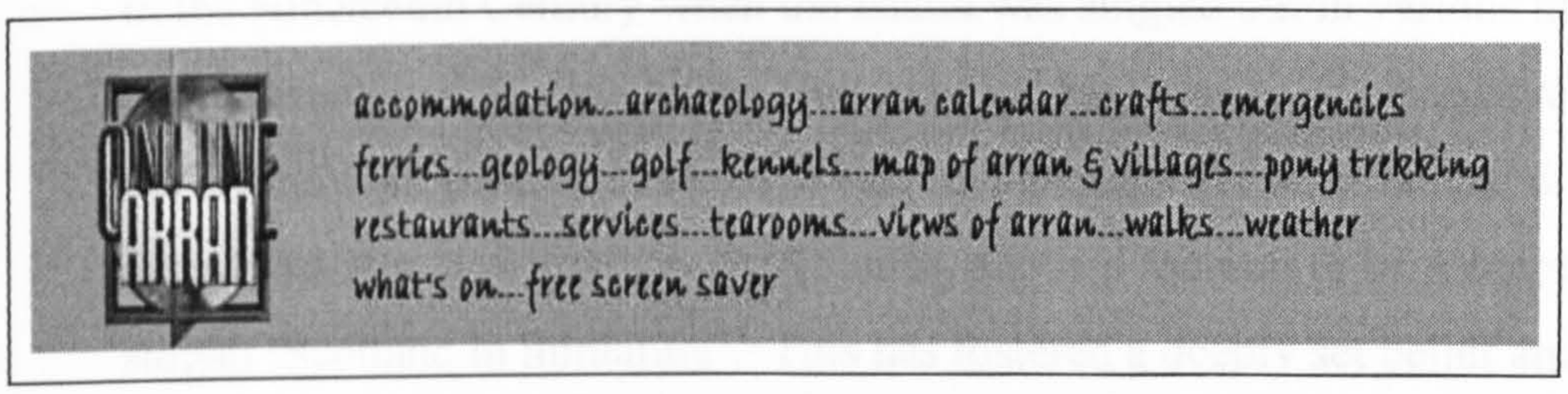
> No-one knew at all what was going to happen with the site. We had no idea how many people would come or whatever... basically we're set up just to supply information for anybody, anywhere. If you live, work or whatever, supply a cottage, from Arran then you're entitled to be on it. *Bill*

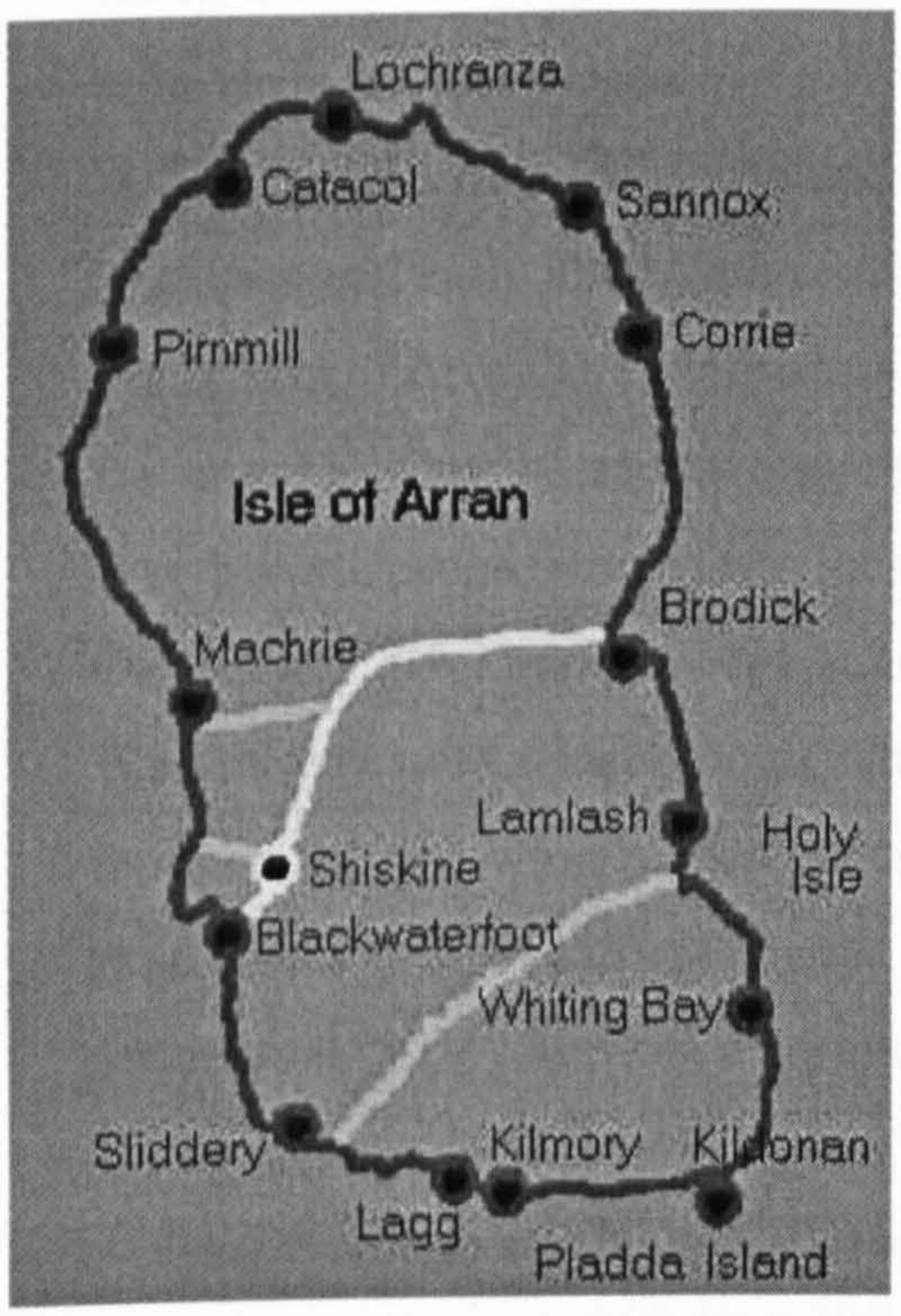
> But the idea is to see if it does make any difference, the idea is to find out... it really is an experiment. It doesn't cost me anything to do, so I'll do it. (It) is primarily meant as a guide to the island, for somebody who's logging on in Halifax or Nova Scotia or somewhere like that...they can find out all there is... accommodation, the whole thing. It's the sort of thing that really the tourist office ought to do. *Hugh*

While Hugh makes no charges, Bill collects a nominal fee of £20 (or £50 with pictures) to local businesses. However, in both of their narratives financial concerns often appear secondary to a more deep-rooted concern with upholding a traditional model of tourism predicated upon the notion of the island's uniqueness and to resisting the efforts being made by AATB to develop a new tourism paradigm.

8.3 'Scotland in miniature': upholding tradition

The promotion of Arran on the Internet by islanders follows the premise that the needs of the island are best served by following a traditional route of engagement with





If you want to visit a village just click on it

Figure 8.1 Homepage illustration / Arran-online (above)

Although no map appears, the homepage immediately informs the reader of the categories that define the Arran 'experience'
Source: http://www.arran-online.co.uk

Figure 8.2 Homepage illustration / Arran.uk.com.com (left)

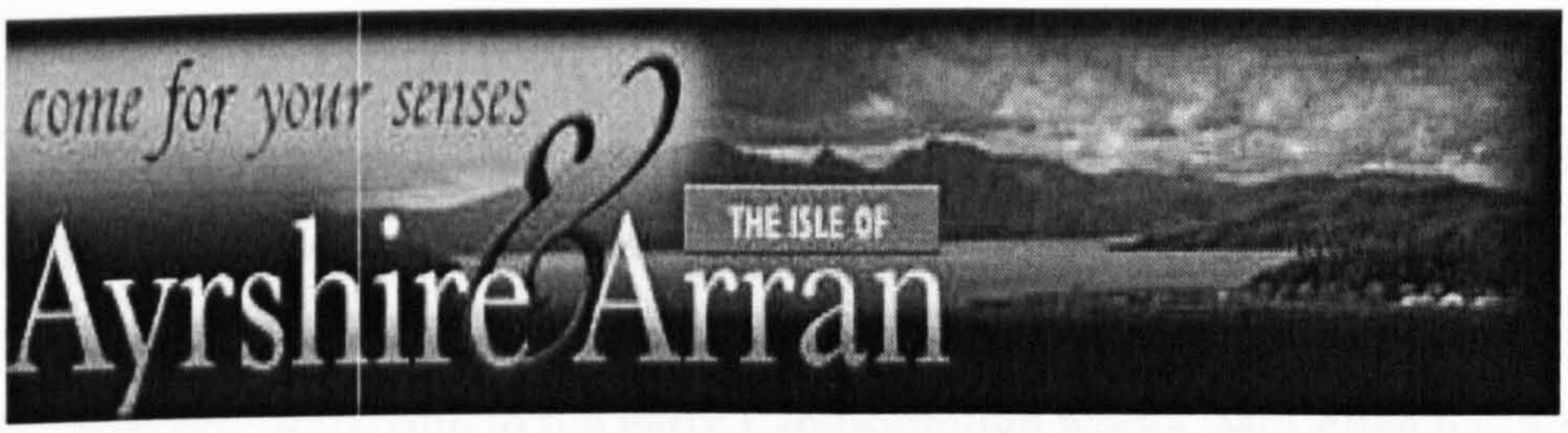
On the site, the island is presented floating in cyberspace with no glimpse of Ayrshire, Bute, Kintyre or any of the island's surrounds
Source: http://www.arran.uk.com.com

Figure 8.3 Homepage illustration / Ayrshire and Arran Tourist Board (1)(below)

The homepage banner presents Arran and Ayrshire as a unified entity
Source: http://www.ayrshire-arran.com

Figure 8.4 Homepage illustration / Ayrshire and Arran Tourist Board (2)(right)

The string of photographs that appears on the homepage is a collage of images of Arran (Brodick Castle) and Ayrshire (Burns)
Source: http://www.ayrshire-arran.com



the holiday-maker. This is built upon a particularly old-fashioned notion of active involvement with 'nature' as opposed to the more passive consumption of 'heritage' associated with later Twentieth Century tourism[9]. Arran's fame originally developed in the Nineteenth Century when the island was singled out in various literary 'tours' as an exceptional locale. James Hutton based his theories of igneous rock formation upon fieldwork conducted on Arran and the geological and botanical diversity of the island that attracted him has, for decades, allowed tourism to be promoted through the slogan 'Scotland in miniature'. This has fostered a deeply set belief amongst many on the island that holiday-makers should not need to augment their vacations to Scotland with visits to other places.

The island's rich geological and botanical variety made it particularly attractive to Victorian and early Twentieth Century middle class holiday-makers. The earliest promotion of Arran as a destination for holiday-makers came in 1828 when the Reverend Dr David Landsborough published *Arran: a Poem in Six Cantos*. Much as Wordsworth propagated a taste for wild nature following his move to the Lake District in 1799, Landsborough achieved a similar result with his 'cult' of Arran. For Wordsworth and Landsborough nature improved was nature destroyed.[10] Secular thought and a growing body of scientific knowledge were generating a new-found reverence for the countryside in the Nineteenth Century now that it was no longer understood merely as a site of wanton calamity and danger[11] (Schama, 1995; Short, 1991; Thomas, 1985).

Landsborough and his son subsequently published several volumes of *Excursions in Arran*, which constitute the earliest works classing as tourist literature concerning the island. Another Nineteenth Century contribution was made by George Milner, who in 1894 published *Studies of Nature on the Coast of Arran*. *The Isle of Arran*, by Robert McLellan (1970, 1995), is the most well known guide to the island in recent decades and is of similar stock. With its illustrations provided by the island tourist board (prior to the amalgamation with the AATB), it is a 'hegemonic' reading of the island intended for the eyes of an imagined community of nature-loving holiday makers. Referring to the early Landsborough works, McLellan has written that

> Today, however, the *Excursions* are in parts almost unreadable, largely because of wearisome repetition in the botanical lists and also because of the compulsion to grasp every possible excuse for the preaching of a sermon. Yet we must admire the two men because in spite of their pedantry and fervour they were men of vigour. They established a fashion for strenuous open-air holidays still followed by many

> regular visitor to Arran, their activities including scrambles to the summits of the Northern peaks, expeditions to the remote lochs, picnics in the glens, usually beside the larger pools where a bathe was possible, and inshore fishing in the evenings from sailing or rowing boats. The island will never have anything better to offer. (McLellan, 1995, 51)

While the enumerative excesses of the Victorian bourgeoisie have not survived their century, their conception of pleasure – derived from bearing witness to geological and botanical bounty – thrives in much of the tourist literature of Arran, suffused with a remarkably protestant fervour for 'vigorous' outdoor excursions. In *The Excursion Guide to the Geology of Arran* (1966), Dr Murray MacGregor notes that Arran has always been a favourite resort of the holidaymaker 'drawn to it by its diversity of scenery and the grandeur of its Northern peaks', adding that to the geologist it has been 'for many years a place of pilgrimage'. In July 1965, the *National Geographic* magazine printed an article entitled 'Home to Arran, Scotland's magic isle'. The author Harvey Howells reflected upon excursions made to Arran in the 1930s and suggested, upon his return to the island, that its greatest merit as a destination derived from the fact that:

> No one tried to turn Arran into a conventional resort. The native's attitude was 'take it or leave it', a thrifty approach that preserved the island's beauty unsullied, the way we visitors wanted it. But all that was 20 years and a war ago. I could only pray that it had not changed. (Howells, 1965, 85)

Howells' fears were allayed and little significant change appeared to have taken place by 1965. However, there has been a sea-change in tourism on the island in more recent years and things have indeed begun to change.

Faced with a decline in the number of people seeking such 'traditional' excursion-based holidays, a competitive market in 'short-break' holidays, centred around luxury accommodation, and 'set-piece' excursions has developed in the UK. This market is intended to function all-year round and must cater for wet weather excursions. As recently as 1996 only Brodick Castle offered entertainment on Arran during periods of inclement weather. This has subsequently been added to by the establishment of the new whisky distillery at Lochranza and, most recently, the refurbishment of the Auchrannie hotel as a leisure club 'luxury lodge' under the auspices of a previous ATB officer who had consistently campaigned for wet-weather facilities on the island. It now offers guests the use of a swimming pool, steam room, sauna, solarium, fitness suite, snooker room, aromatherapy and shiatsu. The Auchrannie's publicity literature stresses that while 'a range of outdoor pursuits' are available to visitors to the island,

'the less energetic' are now fully catered for, listing the Castle, the Distillery and a 'host' of craft shops as likely destinations should the hotel itself not prove entertainment enough. Charles, Arran's Tourism Officer, explains that:

> We're working with the visitor attraction association, trying to get more wet-weather facilities for the island. Auchrannie's latest plans are to put a sporting facility indoors as well. That's the way we've got to go because, I mean, there are people that... Ten years ago, if somebody came into the tourist office and said, well, what was there to do on Arran, we'd say 'well, you're on the wrong island here because this is an island where you come to do your own thing'. 85% of people coming to Arran said that they were coming to walk, either walk along the beach or walk up Goat Fell or walk along the A'Chir ridge. But it's still a walk. And *now* people are saying 'entertain me', you know. *Charles (AATB)*

This is a remarkable change of pace for an island whose tourist economy was, for so many years, fuelled by the passions of amateur geologists and botanists drawn from the middle-classes, augmented by the working class day trippers from Glasgow and Hellensburgh who crammed onto the pleasure steamers that flashed between piers along the Clyde. As the day trip market has collapsed since the middle of the last century and middle-class families have increasingly looked abroad for their Summer holiday, Arran has suffered accordingly. The new developments on the island, and AATB's attempts to integrate Arran within a wider Ayrshire tourism 'package', are symptomatic of this 'crisis'. However, the move towards a new model of consumption is not uncontested.

Neither *Arran.uk.com* nor *Arran-online* locate the island within any broader geography of North Ayrshire, nor indeed of Scotland as a whole (Table 8.2). Maps of the island show it to be free-standing, with no other coastlines in view, supporting the 'Scotland in Miniature' idea. Although national sites such as *Scotland-Online*, *Holiday-Scotland*, *Scotland.com* and *Travel-Scotland* all provide direct links to many of Arran's hotels (providing their telephone or email details) the island sites do not reciprocate with links of their own. They do not provide links to any sub-regional or regional Internet resources (apart from the CalMac site, which provides ferry timetable details).

Both sites resolutely promote the notion of 'Scotland in miniature' and steer clear of any potential horizontal displacement to other areas of Scotland through the resulting connectivity. The authors talk of being 'selfish' in this respect and admit that they have fears that if visitors to their sites make a connection to the Scotland site

	AATB	Isle of Arran Distillery	Arran Aromatics	Arran.online	Arran.uk. com
Authorship	Official	Commercial	Commercial	Informal	Informal
Mentions Ayrshire	Yes				
Hot links:					
To other Arran sites	Yes				
To non-Arran sites	Yes (19)				Yes (1)
Tourist content					
Brodick Castle	Yes			Yes	Yes
Lochranza Distillery	Yes	Yes			
Auchrannie complex	Yes				Yes
Local retailers	Yes		Yes	Yes	Yes
Arts and crafts	Yes			Yes	Yes
Music				Yes	Yes
Geology				Yes	
Botany				Yes	
History & archaeology	Yes			Yes	
Iconic use of island outline		Yes		Yes	Yes
Landscape photographs	Yes	Yes	Yes	Yes	Yes
Gaelic phrases					
Tartan	Yes			Yes	
Truth claims					
Feedback Opportunities	Site invites reader to join mailing list	Email guest book provided	Feedback is invited on site quality	Email address, but no name	Email address, uses designer's name
Guarantees of authenticity	Professional graphics & typography	Professional graphics	Professional graphics; animation	High quality graphics	Amateur graphics
Natural language	Impersonal, commercially-orientated	Impersonal, commercially-orientated	Formal, commercially-orientated	Formal but friendly tone	Personal and very friendly tone

Table 8.2 Content analysis of Arran-related web-sites (last updated April 2000)**

Note: *Truth claims are adapted from those used by Jackson and Purcell (1997)

**Excluding Paterson-Arran; Following the acquisition of Arran Provisions by Paterson, the merged firm is not headquartered on the island and the site has little content relating to Arran.

then they may find an alternative destination. The Islay sites surveyed in Chapter 5, in comparison, provide a wealth of information about neighbouring locales and give useful linkages to relevant Internet sites for touring holiday-makers (Brian's *Ileach* site has over 40 hot-links).

> On the site there are no hot links to anything other than things on our site. Because basically we're being selfish. Once you arrive on Arran that's it... [*But*] the problem is if you go to Lochranza distillery site, one of the links from their site will probably be to Speyside. And I don't want anyone going to Speyside. The hotels don't want anybody going to Speyside, they want them to stay here. As far as this site's concerned it's all about Arran. *Bill*

The 'we' here is ambiguous: in a sense Bill is referring to his business but he is also claiming to speak on behalf of the wider community, voicing fears about 'leakage' to other areas of Scotland through other sites, such as the distillery, on behalf of the

island as a whole. Fear of competition, paradoxically, emerges as a motive force for e-commerce; the very technology that threatens the island emerges as its saviour.

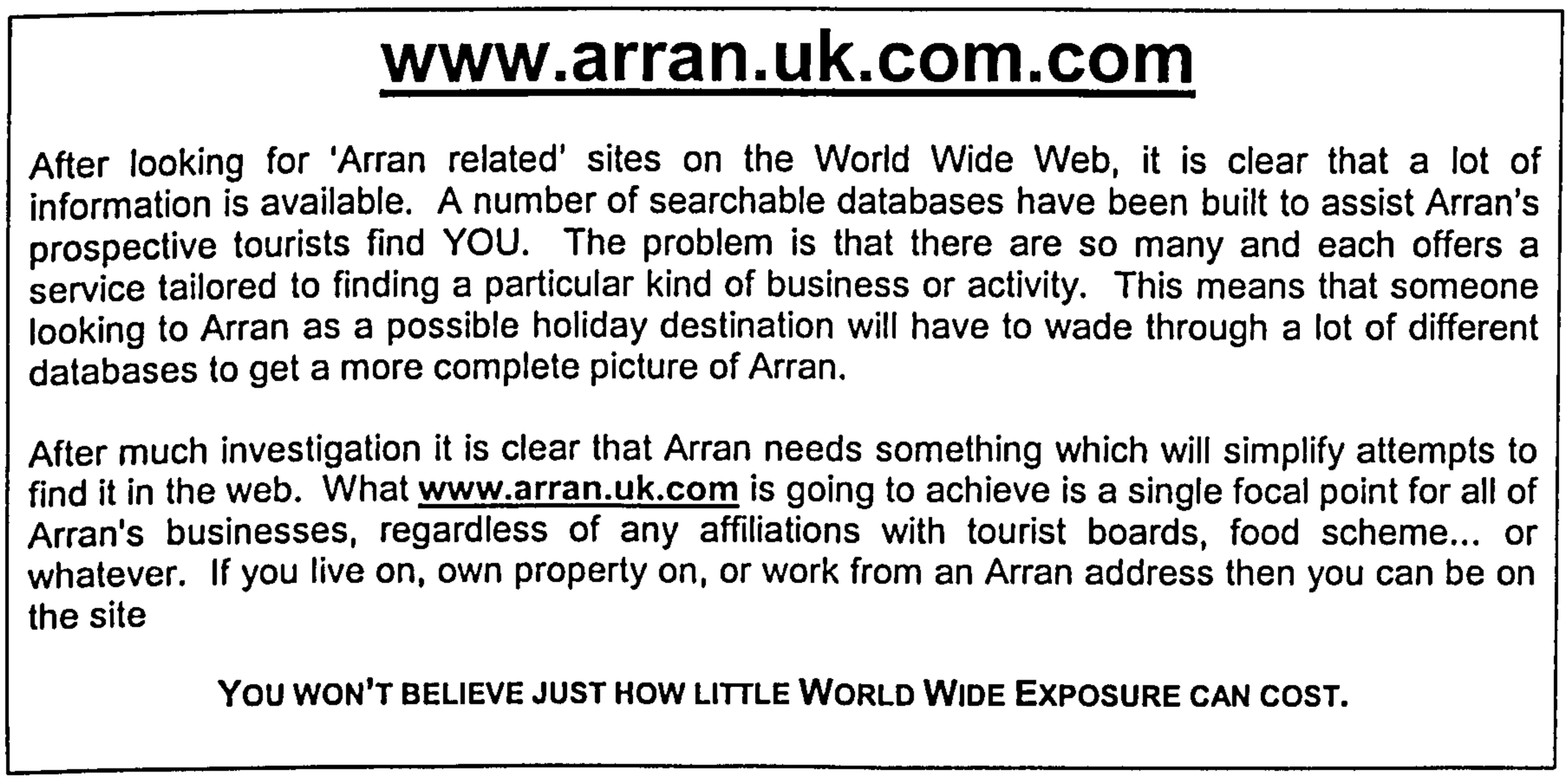
This is a widely recognised paradox of ICT: that the same technologies that produce new opportunities can act to threaten existing markets (Gibbs and Tanner, 1997). The Internet potentially opens the island up to much wider webs of consumption, with sites such as *Scotland Online* operating as 'gate-keepers' who facilitate the downward displacement of the consumer from a national level entry-point to a local holiday destination. Yet it potentially makes Arran vulnerable to superior consumption packages that might be offered in other localities, which may lead to the leakage of established flows of holiday-makers and their trade. The net balance between downward displacement and leakage remains, so far, unknown. In the long run, the Internet may well provide the means for groups in a locality such as Arran to improve their own position vis-à-vis their neighbours within the national space-economy. Such a strategy would be in accordance with observations made by Peck and Tickell (1994) that 'hostile brothers' (in this context neighbouring rural regions of Scotland) must fight locally for recognition in an increasingly competitive global market place (see also Jones and MacLeod, 1999).

However, aside from the quantitative issue of actual tourist numbers, the qualitative aspects of the tourist 'experience' that is on offer – those aspects of locale that are, in effect, being offered up to the tourist's gaze (Urry, 1990) are being actively contested. *Arran.uk.com* and *Arran-online* are attempting to mobilise and stabilise the myth of 'Scotland in miniature' (following Latour, 1993, all such efforts to mobilise truth-claims are examples of network building). Despite the need for heavy subsidies for its ferry service, the island has always prided itself on its self-sufficiency, both in terms of its day-to-day functions and also as a destination for external interests - far more so than other more far-flung islands which, perhaps with the exception of Skye, have always capitalised on 'island-hopping' tours, particularly in the Hebrides. Arran's hourglass figure makes it easy to represent the island iconically on key-fobs, beer mats, calendars and so forth. Local pubs even have tables carved into the shape of the island. However, such rampant iconography (largely absent on Islay, for instance) also continually serves to re-assert the myth of 'Scotland in miniature'.

8.3.1 'Register and sign and away you go!'

The Internet provides the technical means to resist AATB policy with a view to preserving more traditional attitudes towards tourism on the island. At first glance the Internet has all the trappings of a radical technology. While the use of a printing press[12] still requires considerable financial investment, the Internet presents a relatively cheap means of producing materials that counter officially sanctioned knowledge-claims, once the initial cost of the PC has been met. As Andrew (previously profiled in Chapter 7) puts it, 'You don't need financial assistance to do web sites. You've got Microsoft FrontPage, register and sign and away you go!'

Given the limited resources of the region, printed brochures have always been a key promotional tool for local businesses. However, following the rationalisation of their tourist board, the new catalogues place Arran squarely within the wider context of North Ayrshire excursions. Brodick Castle is juxtapositioned with Burns' monument on the mainland. In contrast, *Arran.uk.com* and *Arran-online* make no such concessions to the remainder of Ayrshire. This can be interpreted as evidence of the democratisation of the politics of consumption, yet it is a process which also runs the risk of neutering effective political mobilisation through excessive fragmentation. Although the common feature which links Arran's informal web sites is a symbolic severance from Ayrshire, there is a fierce rivalry and a resulting lack of co-operation between Hugh and Bill, the two site proprietors, while Andrew feels 'gazumped' by the pair, having originally had plans to produce a web site himself which he now feels



www.arran.uk.com.com

After looking for 'Arran related' sites on the World Wide Web, it is clear that a lot of information is available. A number of searchable databases have been built to assist Arran's prospective tourists find YOU. The problem is that there are so many and each offers a service tailored to finding a particular kind of business or activity. This means that someone looking to Arran as a possible holiday destination will have to wade through a lot of different databases to get a more complete picture of Arran.

After much investigation it is clear that Arran needs something which will simplify attempts to find it in the web. What **www.arran.uk.com** is going to achieve is a single focal point for all of Arran's businesses, regardless of any affiliations with tourist boards, food scheme... or whatever. If you live on, own property on, or work from an Arran address then you can be on the site

YOU WON'T BELIEVE JUST HOW LITTLE WORLD WIDE EXPOSURE CAN COST.

Figure 8.5 Facsimile of the advertisement placed in the *Arran Banner*, 25 April 1998

	Lycos	Alta Vista	Google	Yahool	Excite
Arran.uk.com *www.arran.uk.com*	-	6	8	4	1
Arran-online *www.arran-online*	1	-	23	8	5
AATB *www.ayrshire-arran.com*	-	1	7	-	2
NAC *www.ers.north-ayrshire.gov.uk*	-	-	-	-	-
AIE *www.aie.co.uk*	-	-	-	-	-
Arran Aromatics *www.arran-aromatics.co.uk*	19	2	11	-	4
Isle of Arran Distillers Ltd. *www.arranwhisky.com*	-	-	2	-	28
Paterson-Arran *www.paterson-arran.com*	-	42	9	1	12

Table 8.3 Arran-related web sites and their ranking
The ranking relates to some of the UK's most commonly used search-engines, following a search for the top 100 sites containing the key word 'Arran'[13] (last updated February 2000).

would be a counter-productive move. Hugh and Bill both want to see a single site representing the island but, understandably, believe that it should be their own. Bill placed an advertisement in the *Arran Banner* in which he nominated his own site as a much-needed 'single focal point for all of Arran's businesses' (Figure 8.5).

Hugh similarly aspires to manage the definitive virtual representation of the island and has focused his efforts on 'positioning', following the simple logic that whichever site is found first by the Internet search engines will ultimately come to dominate.

> And it slowly dawned on me... there is no *one* web site that you can find and even if there is one web site that doesn't mean anything if nobody's going to find it. And then I found out an awful lot more about the internal promotion of pages, the whole web positioning lark, which is very cut throat in America. *Hugh*

Table 8.3 shows the variance that exists between the ranking of the different sites and shows that AATB – the 'official' representation of Arran – has a dominant position on only one of the five search engines previewed. Other islanders who do not run sites themselves but understand the potential and principles of e-commerce are beginning to express frustration with the apparent lack of co-ordination between both formal and informal agencies.

> I hate this idea, especially in a place as small as this, there still is no centralisation for... a number of people who've got particular ideas and ways of doing things. There can never be consensus or division of labour. I mean I could say 'Right, let's do a web site, you do that, I'll do this'. *Andrew*

The proliferation of sites and the lack of co-operation by the individuals concerned once again suggest that the symbolic aspects of their work may at times take precedence over more pragmatic concerns linked with the island's actual economic status. This is a point that is not lost on one of the *Arran Banner's* readers:

> The island is well-represented on the Internet but the advertisers are spread over several different providers... It could be suggested that members [of the tourist board] *turn their 'anger' to a more constructive mode*, select one provider representing the island on a single web site (letter, the *Arran Banner,* 4 April 1998).

8.4 'NIMBY' must be Gaelic for 'bloody selfish': contesting place in cyberspace

> 'NIMBY' must be Gaelic for 'bloody selfish'... This island was a hive of industry (tourism and construction) long before it was consigned to be one large retirement village' (letter, the *Arran Banner*, 06 June 1998)

The challenges made in the representational space of cyberspace are rooted in long-standing disputes over the economy and culture of the island. Yet they do not simply mirror 'real' disputes. The medium of the Internet also helps to crystallise only partly realised politics while providing entirely new routes to follow. Adopting what Hall (1987) calls a 'realist philosophical position'[14], the debate over the 'real' Arran does, to some extent, 'import' an existing set of power relationships into cyberspace. Yet this debate it is also a *product* of the new technology, something that has emerged from the network, so to speak. This is because the Internet is a technology that increasingly calls into question the very essence of locality[15].

The information revolution demands that a mental 'stock-taking' exercise be carried out on its participants, with the effect of amplifying previous debates and dichotomies that were previously seen only in half-light. A clear rift now exists on the island whereas previously there were merely degrees of uncertainty. There are those who firmly believe that a prosperous future for the island can only be based upon greater uptake of short-break indoor-orientated holiday-making, electronically linked to the wider environs of Scotland through the 'mix and match' personalised holiday service provider, Project Ossian. There are others who wish to preserve a more traditional model of consumption for whom the Internet is a cheap, easy and potentially influential medium for their message. All of this is symptomatic of Marsden *et al.*'s (1993) notion of the contested countryside. Some local actors are devoutly preservationist in their outlook, while others are more clientilistic and are

not shy of encouraging change and development, including the tourist board who are committed to selling the island – year-round and in all weather - as a product.

8.4.1 Real information about the real Arran

The provision of information plays a key role in buttressing vying conceptions of local identity. For AATB, the web site is a means to convey the island's products, such as whisky and cheese, to the short-break visitor.

> We've got more product here than they have and Skye's about 450,000 acres, Arran's 150,000. So it's four times bigger, but we've got a bigger foothold in products.
> *Charles* (AATB)

Hugh, reflecting on the first time he visited the official AATB site, remembers that:

> I thought, Christ, if that's the best that Arran and Ayrshire [*tourist board*] can do, don't bother. It was hopeless, there was no *real* information. It really is just awful. *Hugh*

The island's 'real' attractions, from his point of view, lie elsewhere:

> Well geology, it's world famous, no question and biology's the other thing... just over there [*points*] the rocky shores, just superb... So the biology, geography and geology, all absolutely perfect. It's potluck we ended up here, but it was very fortunate. *Hugh*

These are, not surprisingly, information categories that feature prominently on Hugh's own site. Yet Charles' rationale for breaking with the older tradition of tourism is extremely pragmatic and is rooted – as a native islander - in the same set of concerns that are so evident on Islay, namely to secure the economic and demographic stabilisation of the island. However, as Chapter 5 demonstrated, there is much greater support to be found for the clientilistic policy of 'Islay the Brand'. The broad consensus for change that is found on the island was also exhibited through the support given to Brian by local businesses and the marketing group as he has attempted to promote the island in cyberspace through the *Ileach* web-site.

Arran shares many problems with Islay. The seasonal nature of traditional tourism on the island often encouraged establishments to recruit cheap student labour from Glasgow during the summer. However, new ventures such as the Auchrannie and the Distillery have been able to provide full-time contracts to local island residents with an aim to trading all through the winter months:

> And since they've done that they're employing people on a full-time job basis which is what you want. Money going to the mainland is not a good thing. If folk are earning money in the island and spending money in the island and it's jobs for young folk it
> .

> means that not everybody has to leave the island which must be good. *Charles* (AATB)

The seasonal nature of the tourist industry has always been a concern to local agencies. The shift towards all year-round tourism will potentially provide more stable employment for certain sections of the population, in particular for young school leavers from less affluent families. However, it is a trend which lacks congruence with the ways in which more affluent incomer groups socially construct rurality. Arran has a substantial faction, far more so than on Islay, of people who wish to see the island remain 'unspoilt', with some currently campaigning for its designation as a national park. Such preservationist attitudes are often expressed by new social groups, incomers who Hirsch (quoted by Murdoch and Marsden, 1994, *xi*) characterises as 'articulate consumption interests who use the political system to protect their positional goods'. Andrew, despite being an English newcomer himself, notes that

> It's difficult as well, there are so many retirees and people of that ilk. They come here to live and they don't have to make a living. They've done their bit, they're living off their pensions or their golden handshake or whatever. I don't know what the percentage is but it's pretty big. I mean you've heard that Whiting bay is called 'Little Yorkshire'? *Andrew*

Charles, as a native islander, complains about the attempts of English newcomers to retard any subsequent development that might aid the 'new' tourism:

> And this is not as bad as it used to be, I mean it's a particularly bad season but previously September weekend to Easter was totally dead. Nothing, I mean the island just shut. No hotels opening, none of the staff kept on. The Auchrannie changed that, broke that mould. But there are people that object to it [*The Auchrannie complex*]. There are a lot of people that believe in the flat earth, people say that they want Arran to stay the same as when they first came to it. Unfortunately most of them are in the houses that were already built when I was young. The sportsfield's the latest one where all these people have said they didn't want a sportsfield. *Charles* (AATB)

These factions try to preserve the 'authentic' Arran and ensure that it is only promoted as a site of consumption in a way that is in accord with the Landsborough tradition of 'Scotland in miniature'. However, 'authenticity' itself is a contested cultural construction, particularly in the field of landscape (Cosgrove and Daniels, 1988; Daniels, 1993). The range of positions held by islanders – in relation to notions of authenticity - is quite varied. Charles was particularly unimpressed by efforts to block the development of the distillery:

SO: And lots of people didn't want the distillery here, did they?

Charles: No, there were a lot of objections to the distillery. 'Very inappropriate to have a distillery here' (*laughs*). But there were 300 stills from Lochranza round to Whiting bay 150 years ago! Arran was just too easy for the customs men to get to.

Charles highlights an important point about heritage, and the selective appropriation of the past to buttress the politics of the present (Gilroy, 1987). It is notable that the tradition of whisky production is less authentic to some segments of the island's population than the heather moorland which is, more often than not, a plagioclimax plant community that followed extensive forest clearance in the Middle Ages. This recurring debate over historical validity and rural representation is, of course, not only restricted to the new medium of the Internet. A recent letter to the *Arran Banner*, complaining about the nature of television coverage of the island, provides a detailed outline of 'correct' ways to consume Arran.

> Just who is it the recent radio and TV holiday programmes is intended to attract to this blessed island? Both programmes followed the same route - a rather expensive hotel, a splash of toiletry and off for a nip of whisky. All very nice but is this the Arran experience? One has the suspicion that when the media 'phones the Tourist Board they are given a list ready prepared for such enquiries. Granted they always mention the Castle but without any explanation of why it is unique in both its content and its fascinating gardens. The cultural life of the island? Never a mention. The wide interest of natural history to be seen – the archaeology – the geology (Hutton's Unconformity at the North end of the island is said to be the origin of modern geology), the museum depicting the life and times of Arran folk is surely a more appropriate place to visit if one wants to know what Arran is all about. After all these large tourist attractions are newcomers, so to speak, and could be perfectly well operated on an industrial site near Glasgow. (Letter, the *Arran Banner*, 11 July 1999)

8.4.2 Whose rurality is it anyway?

The self-sufficiency ethic promoted by the ICT industry – encapsulated by the Microsoft slogan 'where do you want to go today?' - infers that anyone can contribute to the representative processes that have been described here (see also McKie, 1996). Yet appropriate skills and some amount of capital are vital and in practice not everyone can, in fact, promote their vision of the island in cyberspace[16]. Incomers certainly constitute almost all of the island's digerati, and there may be alternative discourses of rurality which are effectively excluded (Woods, 1997; Murdoch and Pratt, 1997). For example, the tourist trade's commodficiation of Scottish rural life is not to everyone's taste[17]. Tartan and bagpipes proliferate on Arran's sites, both formal and informal. Such commodification of Scottish life – in both a rural and an urban context - has been vigorously resisted in some quarters.

A series of articles in the *Scotsman* has critically examined the 'vast amount of tartan and bagpipes' appearing on web sites promoting Scottish tourism and has asked whether they 'pander too much to the tartan image?' (Alstead, 1998). Much literature devoted to the sociology of Scotland has focused on two notably 'frozen' discourses, *Tartanry* and *Kailyard*, as the 'paralyzing twin exterior emblems of Scottishness' (Osborn, 1988. See also Craig, 1982; McCrone, 1992). Both are key features of the majority of Scottish web sites. McCrone *et al.* (1995) describe Tartanry and Kailyardism as examples of what Raymond Williams referred to as 'cultural formations'. They are 'effective movements and tendencies, in intellectual and artistic life, which have significant and sometimes decisive influence on the active development of a culture' (quoted in McCrone *et al.*, 1995, 50).

Tartanry, with its highly emblematic array of visual supports, is largely associated with mythical memories of the 1745 Jacobite rebellion and carries with it echoes of epic endeavour and physical grandeur (Womack, 1989) [18]. Kailyard is a Lowland tradition that emanates initially from the work of J. M. Barrie (1860-1937), depicting a sentimental and romantic image of small town life in Scotland, with much use of the vernacular. Sentimental characters were bounded by their own 'cabbage patch' - the literal meaning of the word Kailyard[19]. The inherent egalitarianism of the Kailyard myth - attributable to its sense of democratic opportunities for all - is a recurring theme in pre-industrial 'golden ages' myths both north and south of the Border[20] and Kailyard may be understood as a specifically 'Scottish' version of the utopian myth of pastoral life.

Like traditions, myths draw selectively from the past in a process of exclusion and inclusion. They form a reservoir of meanings which can legitimise belief and action in the present (Williams, 1973, 1977, 1983). History has to be continually re-negotiated and re-signified in order to (re)create a sense of the past appropriate to the particular conjuncture and the political project for the future. In such a context, myths are abstracted from notions of truth or falsity. They validate actions, emotions and experiences in a purely objective sense that is entirely divorced from their contested status as historical truths. They exist to serve immediate political and social ends and are rarely deflated or overturned even in the face of irrefutable evidence against them[21]. Such national myths, appealing to rural life, are remarkably active in the context of globalisation, precisely because the status of the nation-state is seen as being jeopardised (Melucci, 1989)[22].

The Kailyard myth is loathed in some quarters for portraying a negative view of Scotland as a 'mouthy, domestic, sentimental world' (Craig, 1982, 11) and for perpetuating 'deforming nostalgia - constantly confirming a false infantile image of the country' (Nairn, 1977, 139). Many intellectuals have subsequently argued that the 'wrong' myths are operating as a hegemonic ideology into which even the most well-meaning Scots artists, such as the novelist Iain Banks and the film director Bill Forsyth, are interpellated[23]. Yet, both Banks and Forsyth are highly regarded within Scotland, in spite of, or indeed perhaps because of, their moments of Scottish romanticism. As Edensor and Kothari (1994, 183) point out in their survey of Tartanry, as it is promoted at Stirling heritage sites, 'we cannot assume prior knowledge of how their construction restricts Scottish visitors in their power to interpret, practise and imagine nationalism, place and history'. A certain 'fuzziness' is always discernible in relation to issues such as sovereignty, nationalism and national representation (Gray, 2000). The survival of Kailyard is not simply reducible to gratification of the English and North American tourist gaze.

However, Nairn's attempts to engineer ways in which these myths can be 'excised by a dose of historical realism' have found widespread sympathy (McCrone *et al.*, 1995, 60; Pow, 1999). In a further article entitled 'a step in the wrong direction', publisher DC Thomson's Scotland Online was singled out in particular by the *Scotsman* for giving an impression to the reader which is 'straight from the Kailyard':

> The most charitable description of this offering [*Scotland Online*] is that it is the electronic version of the *People's Friend* or even *The Sunday Post*... Anyone looking at this site from overseas would have a very limited impression of the type of things which are currently on offer in this country. One can only presume that this is DC Thompson's somewhat parochial interpretation of the cyber-world. When the Dundee-based company announced its joint venture with Scottish Telecom, the ScottishPower subsidiary, it was clear to all that it would draw on its extensive publishing experience. What is now clear is that it has imposed its own distinctive house style. (*Scotsman*, 1998)

Issues of representation are thrown into sharp relief by the advent of the Internet, a technology that propagates information. Certainly web sites which draw on national myths such as Tartanry and Kailyard are potentially highly partisan representations of place constructed often by non-accountable organisations. Details or images of individuals may be used without their permission. 'Nobody gets any choice, they're on it whether they want it or not' is one maxim that Hugh – an English migrant - adopts in relation to his own site

which promotes a romantic and largely un-peopled representation of Scottish rural life. How might such a representation be regarded by the 50 % of islanders who, according to a poll launched by the *Arran Banner*,[24] voted in favour of a Scottish parliament with tax-raising powers in the 1997 devolution vote?

8.4.3 Representation and computations

The dominant representation of any locale such as Arran might be the one which receives the greatest number of hits which depends purely upon the technical resources and skills of its proprietor. Qualified to Ph.D. level as a physicist, Hugh has been using computers since 1962 and he points out that 'nobody could have more background in terms of computing than I have.' The NAC site does not always feature as highly as Hugh's *Arran-online* in some of the major search engines' results which is not surprising given the lengths that he has gone to in order to ensure its dominance.

> I'm spending so much time on promoting - promoting's the wrong word, but anyway - the web site in terms of people being able to find your site... the trick is, no matter what somebody dials in, if it is related to your web site you want them to come up. But since there are thousands, or god-knows-what, the chances of you coming up in the top ten on the first page are vanishingly small unless you have set up doorway pages. It's knowing all that and knowing how to pool it together. *Hugh*

Charles observes, in relation to such developments, that 'obviously we're going to have to have a serious look at what our engines are and look at what people we're hitting'. Officially 'sanctioned' organisations such as AATB do not always have adequate in-house skills to guarantee their pre-eminence over non-accountable sites. As Charles notes,

> Eventually we're going to have to employ an IT person because at the moment its just amateurs . I mean I'm about as good as it gets in the company and I'm struggling. And yet in terms of Scottish tourism there's maybe only about a dozen folk in any of the area tourist boards that are any better than I am. So we need to bite the bullet and say 'now it's time for IT people to come in and start running this thing'. I think in the next 10 years we'll see a complete change and the nerds will take over. Because the nerds are the guys that are gonna get folk in because they know the equipment and they know how to get people, get that electronic signal into people's houses. *Charles* (AATB)

Following the tenets of ANT, the *geometry* of the networks that underpin the construction of place has fundamentally changed. Tourist board members previously had to subscribe to a consensus model of consumption for the island, established

through the production of certain key artifacts such as the annual accommodation guide, tourist board brochures and the annual scenic calendar. The nature of the technology required to produce these artefacts – full-colour printing presses – demanded inter-actor co-operation prior to their enrolment of the printing presses due to the heavy fixed costs and the economies of scale needed to produce items such as brochures.

A more simple alliance can be achieved now, involving as few actors as one individual, a PC, editing software and a modem. The results of this collaboration can, on the other hand, be accessed by a global population. At first glance this may seem indicative of greater democratisation of the local decision-making processes. However, not everyone has the skills or resources to forge such an alliance. If this is a source of 'power' then it is one that is inherently undemocratic.

> If everybody has the same means to achieve something - I mean we're all using the same machines, we're all using the same software - then if I disagreed with the way you want to do it, I'm going to do it my way anyway. And it's almost as if, rather than actually go down the route to even try to work together, people would rather just do it their own way in the first place. *Andrew*

Local inclusivity in the decision-making process may actually be lessened if the Internet becomes the dominant mode of representation for the island and yet only a tiny handful of individuals are accountable for the content of the dominant Arran-related sites.

8.4.4 Blinded by science?

What may also be easily forgotten in the excitement over e-commerce is that debate has now effectively ceased over whether tourism *per se* should be promoted to such a great extent on the island. ICT has acted to foreclose debate over other models of economic sustainability, proving once more that it is a mistake to perceive ICT simply as a tool. As Chapter 4 showed, ICT's reflexive relationship with society is displayed in the ways that it challenges local governance structures and helps to set the agenda for debate. While it is yet to be proven that tourism on Arran can be successfully rejuvenated through e-commerce, there is little talk of other alternative strategies to deal with the seasonal unemployment problem. In the meantime, the linked social issues of incomers, high house prices and over-dependence on agriculture and tourism continue to be a cause for concern. There are 606 second homes on *Arran (Arran Banner*, 1998c) even though the resident population numbers less than 6,000. Yet

housing stock for native islanders is in short supply and construction costs are prohibitively high on the island.

While Arran's economic prospects are better than most rural and island communities in the Highlands and Islands, they are still fragile with a heavy dependence on tourism and agriculture, both of which have not performed that well over the past 10 years. Critical to future economic well-being of the wider community is greater economic diversification, a process which is inextricably linked to continued population growth. Within this context, housing plays a critical role and supply remains limited as long as tourism encourages second-home ownership. These and other issues appear to be neglected as local attention has focused upon the governance of tourism and local representation rather than upon possible alternatives to tourism that might be more sustainable in the long-term. Notably, these points were only voiced during the interviews by Richard, the one member of the island's resident digerati who is native to the island:

> Arran sometimes gets, it's more of a... retired people's playground at times. That, or a tourist island. A lot of the focus of the local enterprise company and the council has been on the tourist industry which is a very, very fragile economy and easily damaged and I wouldn't want to see it strengthening. I would rather see diversification in a way. *Richard*

8.5 Local accountability

Marshall McLuhan suggested that in the 'electronic agora' everyone would be free to voice an opinion, free of censorship. However, it has been show here that the demise of human co-operation is not synonymous with greater democratisation of the decision-making process. Smith (1992, 1993b) has outlined the ways in which electronic public space provides communities with an opportunity for 'jumping scale'. This is a form of resistance that allows actors to do away with spatial boundaries that have been imposed mostly 'from above'. In a survey of Internet sites dedicated to small American towns, Longan (1997) suggests that computer networks make such localities 'visible'. People who are relatively fixed in certain locations can jump scale to reinforce the permanence of their community in the face of more mobile capital flows.

Yet too often evidence of 'jumping scale' is taken at face value to be a democratising act, as if the championing of 'the local' automatically establishes

progressive credentials. When viewed in the spirit of Agenda 21, the local, however it is conceived, can appear as a radical alternative in relation to globalisation, that inherently aggressive and unethical product of late capitalism. What is clear in the case of Arran, however, is that 'jumping scale' is actually indicative of a failure of local governance, not a move towards greater political enfranchisement.

Several issues arise here. Firstly, in the constantly flowing space of global electronic networks, scale does not inherently exist, rather it must be consciously recreated (Castells, 1996). This fits with ANT's assertion that constructs such as scale are emergent properties of socio-technical networks. Murdoch (1997) refers to both the local and the global as 'purified outcomes' that emerge from relational networks and Hugh and Bill's web-sites can be regarded as such an outcome. It is the processes of globalisation and the fears of competition that are engendered by ICT that promote such purification practices, promoting the (re)construction of the local.

However, the levelling powers of the Internet appear spurious in the sense that, despite its supposed 'flatness', a spatial hierarchy must still be established if the locality is to develop any true meaning for those who are not already familiar with it. Any site that promotes a locality in a way that is severed from any wider sense of place – as with the Arran sites - may only be used by those who already know the island. Otherwise 'national' gateways such as Scotland Online are necessary to lead the new consumer to a locality via the process of downward displacement. In a similar vein, Warf and Grimes (1997, 267) have written, while commenting on the use of the Internet to promote political programmes, that it is often a case of 'preaching to the converted'. Internet users are very often already sympathetic to positions advocated at a site that they visit directly.

One final arising issue that relates to the re-assertion of locality concerns the governance of such processes. It is possible to argue for functional 'reasons' behind the electronic promotion of place (Longan, 1997). By increasing visibility, web-sites integrate the locale into the space of flows (Castells, 1996). Alternatively, the construction of community networks can be read as an attempt to resist the processes of global homogenisation by emphasising the distinctiveness of the locality. However, such actions may be undertaken by individuals or groups who are not necessarily accountable for their actions and who promote their locality in a way which articulates with selective established interests, possibly to the detriment of others.

In the case of Arran, the act of 'preservation' hinges around the notion of 'Scotland in miniature' which restricts seasonal employment opportunities and severely limits the scope for successful entrepreneurial activity. It relies upon a Romantic conception of nature and aligns itself with the 'twin' discourses of faux Scottishness, Tartanry and Kailyard, to provide a back-cloth to what some actors refer to rather disparagingly as an 'old people's playground'. Arran's web-sites – ensembles of humans and machines acting simultaneously to promote the locality and defend its boundaries – are much more than a knee-jerk reaction to largely unspecified 'external forces' acting on the locality. Vying conceptions of rurality, of Scottishness and of island life - containers whose contents frequently prove to be inter-changeable when analysis is brought to bear upon them - both inform and are, in turn, challenged by the work of web-site construction.

Novel aspects of chat-rooms and fan-clubs - the 'community without locale' (Kitchin, 1998, 396) - dominated much of the early debate over the Internet. However, while the long-term durability of on-line communities forged through common interest, rather than through a vested interest in a shared place, has yet to be tested, the relationship between locales – as pre-existing real spaces - and the 'globalising' technologies of the Internet are likely to prove fertile ground for future geographical study. Whether the Internet will genuinely boost tourist revenues for places such as Arran will not become clear for several years. Bill's site averages 6,000 hits a week[25] but whether this translates over time into increased trade for the island remains to be seen[26]. More research will certainly need to be conducted which examines the revenue streams that derive from online marketing of localities. What is already clear, however, is that there is far more to the politics of the on-line production and consumption of place in cyberspace than a simple interest in numbers.

Notes

[1] Technology's emancipatory potential has been recognised for at least as long as its potential to operate as a tool of oppression, as described in Orwell's *1984* (1948) More recently Alvin Toffler has argued that new technologies are subverting the dominance of the old 'media lords' – all evidence of what Toffler (1981) describes as the process of 'de-massifiying' the media.

[2] Internet usage in China grew from 2.1m in December 1998 to 8.9m in December 1999. In January 2000 Bejing effectively banned Internet users from publishing 'state secrets' on the Web (*Guardian*, 2000).

[3] HTML is the overall name for the tags that are used to mark up web pages so that they display and link to other pages correctly. HTML is the official standard endorsed by the World Wide Web Consortium (W3C).

[4] Hall (1987) argues that, following Lacan, ideology is material because it operates *in and through* the production of subjects. Althusser therefore appealed to Lacan in order to fill the empty space created by the structuralist dethronement of the 'I' of enunciation.

[5] However the interpretation of 'hits' must be done with extreme caution. An individual may only visit a site for a few seconds, or the same individual may re-visit many times seeking additional information. An individual with a traditional printed brochure is free to peruse it as many times as he or she desires.

[6] However, critiques of the information age often point to the 'Taylorist' aspects of the new technology linked to job losses and rationalisation (Robins and Webster, 1987). While Project Ossian will undoubtedly help to boost tourism figures it will also have a potentially devastating effect on staffing in the area tourist boards. As Charles notes, 'One of our major troubles in the tourist board was finding out what accommodation was available so people had to ring us in every day and say 'yes there's 2 beds'. You can go on the web and call it up there. It doesn't take our staff time to actually talk to them. You can go in at any stage and download everybody's accommodation details'.

[7] In addition to their financial troubles AATB have been further dogged by a long-running sex discrimination case being fought by Visitor Services Director Margaret Suter who had applied for Mr Buchanan's job following the merger of the two boards and failed to get it. (*Arran Banner*, 1998c).

[8] In August 1999 Andrew, working with Graham C. (Arran Graphics), actually began to canvass island businesses to join a rival association named the Isle of Arran Accommodation Register. In an open letter to the *Arran Banner* they stated that while it was not their attention to encourage people to resign from the AATB, they were intending to create a register of local tourist businesses dedicated purely to the island, much as the old Arran Tourist Board had been.

[9] The island's reputation as a golfing destination – courses proliferate on the flat raised beaches that ring Arran – is the only exception to this rule, encouraging weekend visits, although even this is a outdoor pursuit and in keeping with the model.

[10] Until the Nineteenth Century the rural landscape was generally understood as 'humanly improved natur', as modified according to classical Western conventions (Mugerauer, 1995). Writers such as Thomas Cole (*Italian Scenery*, 1833) subscribed to the view that to be a landscape at all, nature must be cultivated. Across the Atlantic Thomas Jefferson famously found no pursuit as pleasant as 'the cultivation of the earth'. Such views were to all but disappear in the later Nineteenth Century.

[11] Vestiges of a pre-modern ascetic rural landscape, articulating a deep distrust of nature in the absence of cultivation, still survive to the present (Schama, 1995). However it has been the Romantic appreciation of nature which, for the most part, has informed environmental perception and action. The different rural landscapes of the early and later modern period cited thus far serve to illustrate that the relationship between society and nature is not fixed. While, as Wilson (1992) points out, we like to imagine that our affinity with pastoral imagery comes 'from within', the feelings that we associate with rural landscapes are not essential and transcendental. They are part of a repertoire of feelings and images that our culture produces and are, in effect, indistinguishable from nature itself. Efforts to travel into 'nature' become 'tourist excursions that remind the voyager of the price of such displacements - one pays to see fun-house reflections of oneself' (Haraway, 1992, 296).

[12] The Guttenberg press is often cited as the only real antecedent to the Net with regard to the *scale* of the information revolution that it brought about. The point beyond which information could be printed and physically distributed marked the beginnings of a more democratic age in which counter-

hegemonic claims could be more widely circulated and considered by populations who hitherto had no means to challenge autocratic ideologies.

[13] A world-wide search was conducted submitting only the keyword 'Arran'. Often chart positions were taken by 'rival uses of the word 'Arran'. It is a fairly common American name, for instance and several teenagers named Arran have homepages that figure prominently on the Internet, reflecting their placement skills.

[14] Hall adopts this stance in preference to the extreme non-essentialism of Foucault. The same position is taken here: reference can be made to pre-existing class and interest groups in the rural space of Arran without losing the subtleties of ANT.

[15] As Massey (1995) observes, issues of place-bound identity have become more and more urgent as globalisation has proceeded apace. Drawing on Robins' (1991, 41) observation that 'the driving imperative is to salvage centred, bounded and coherent identities – placed identities for placeless times' she notes that there is a paradox at work. People are searching after, and trying to establish, such an interpretation of place at the very time when the fact of 'increasingly stretched, spatial flows makes any such notion much more difficult to maintain' (Massey, 1995, 48).

[16] At the outset of the research period, domain names also represented a considerable expense. They no longer cost nearly as much, with some domain names being available for free by the end of 1999 including the 'co.uk' suffix. However the suffix 'com' still costs around £50 per annum to use.

[17] Gaelic speech, like tartan, is all part of the hard currency of consumption and HOST's chief executive David Noble recently announced that his Web site could now offer those with a multimedia receiver the opportunity to hear a voice speaking 'some Gaelic phrases to give them a flavour of the traditional tongue, highlighting the special heritage of the Highlands' (*Herald* 1999a).

[18] The 'authenticity' of Tartanry has been challenged on many occasions. Although the antiquity of tartan is proved by many references to it in early Scottish literature, tartan was 'made' for the modern world around the turn of the Nineteenth century. The 'Proscription Act' that followed Culloden in 1746 banned the wearing of highland apparel but was repealed in 1782 as a result of political pressure from Scottish elite living in London. A general fascination with the Highlands, in part generated by the Romantic Movement simultaneously fostered the acceptance of tartan in English civil society as a signifier of primitive myth and mystery and of untamed wilderness. Many of the clan tartans appearing in heritage literature actually derive from the book *Vestiarium Scoticum* (1842) published by the brothers John and Charles Allen under the name 'Sobieski Stuart', claiming to be the grandsons of the Young Pretender. Although the fraudulent nature of this book was later revealed, the myth of tartan had already taken hold of the English elite, most notably on the occasion of George IV$^{th's}$ 1822 visit to Edinburgh bedecked in tartan. See Womack (1989) for a detailed account of the construction of the myth of the Highlands and the eulogy of the 'noble savage' and unkempt wilderness by the Romantic movement. See also Schama (1995), Short (1991) and Thomas (1985) for varying accounts of the construction of 'wilderness' and other nature myths which underpin the attraction of Tartanry to Eighteenth and Nineteenth Century bourgeois society.

[19] Other leading writers in this vein were 'Ian Maclaren' (John Watson, 1850-1907) and S. R. Crockett (1860-1914). The use of the phrase Kailyard to describe a literary trend is usually attributed to the critic George Blake (McCrone, 1992). The celebration of hard work and achievement - enshrined in the 'lad o' pairts', the farmer's son who betters himself with the support of a local teacher or other affluent of the parish - is central to Barrie's narrative.

[20] The roots of rural 'Golden Age' myths are found in the often-rapid social transformations accompanying industrialisation as Thomas (1971, 1985) has repeatedly stressed. Carter (1976, 1979) has analysed the Kailyard tradition in its socio-historical context as a cultural concomitant to the penetration of agrarian capitalism into a peasant economy. Scotland has often been seen as an exemplar for Weber's thesis on the hand-in-hand advancement of Calvinism and capitalism. The values espoused by Kailyard, namely that hard work and sacrifice will always be rewarded, were in harmony with the transforming spirit of capitalism. However the sense of democracy engendered by a belief that opportunities are available to all who avail themselves of them helps to foster, rather than diminish, a sense of community. The American Dream is a similar myth in this respect. However, as with Tartanism, the heavily gendered aspect of Kailyard ideology belies its supposed egalitarianism, a point pursued by Edensor and Kothari (1994) in their essay on Scottish heritage.

[21] Roland Barthes uses the term 'myth' to refer to an object that is signified within an ordinary linguistic sign but at the same time serves as the signifier within a secondary sign, having been pressed into the service of a concept. Drawing on Barthes in an explanation of the role of heather as

a signifier of Scottishness, Womack (1989) explains that 'It would be about right to say that Highland heather signifies Scottishness, wild freedom, naturalness, antique valour. But that is talking loosely; it is not the point of myth that it should specify denotations in that way; this is not a question of symbolism. Rather, the heather 'is made the instrument of an intention, saturated with ideological imperatives which, by merging themselves with its incontestably organic fibres, win for themselves the opaque and self-evident charm of a natural contingency' (Womack, 1989, 2).

[22] Utopian myths associated with pre-industrial and pre-urban social formations resonate throughout various Western cultures. These are *national* myths as they provide the ideological cement for an imagined community or society which is inextricably linked to the project of nation-building, a task which has grown increasingly problematic in a post-Fordist and post-modern world of international data flows and time-space compression. Greater internationalisation of markets and the ceding of power to supra-national organisations such as the European Community and the International Monetary Fund is matched by demands for greater devolution of power at the regional level and Rio-inspired locally-orientated environmental action. As explained earlier, these processes are inextricably linked. The loss of military prowess as a route to national self-determination and the presence of many national cultures within the body of the multi-cultural nation-state call into question further the survival of the nation as a self-contained 'society'. However, precisely because of this still-unfolding grand historical shift towards the 'un-making' of the nation-state, national myths remain significant, thereby directly contradicting the expectations of the founding fathers of Sociology such as Comte and Durkheim who, in accordance with the spirit of modernity, prophesised the demise of parochial, 'tribal' group attachments. According to Melucci, as the multiplication of contacts and the constant flow of messages steadily destroy the homogeneity of individual cultures, ethnicity is revived as a source of identity to meet emergent needs. Any apparent paradox is resolved by recognising that while ethno-nationalisms are plainly rooted in the past, they also highlight continuing societal transformation and discontinuity. In the case of Scotland, as a 'stateless nation' (McCrone, 1992), the survival of national myths is especially intriguing as they have remained divorced from a larger political project for much of the last century. McCrone (1992, 10) argues that 'The fact that it can claim to be a nation without a state in the conventional sense does not mean that it remains an anomaly in the modern world as judged by the more traditional perspective of 'modernity'. Rather, Scotland becomes an example of those fissiparous tendencies threatening to remake the world political order, an order in which the correspondence between states, societies and nations is no longer clear-cut.

[23] Kailyardism is, by all accounts, still thriving. However this does not necessarily imply that it is responsible for perpetuating what Nairn has called 'cultural sub-nationalism' amongst the Scottish people. Originally enshrined in celluloid form with Ealing's *Whisky Galore* (1949) and Hollywood's *Brigadoon* (1954, subsequently making the term *Brigadoonery* a rather more lyrical alternative to Kailyard), the cinematic Kailyard is still in evidence, as is Tartanry, most recently in the guise of Mel Gibson's *Rob Roy* (1995). Forsyth Hardy's *Scotland in Film* (1990) gives an account of Hollywood's search for an 'authentic' Scotland in preparation for *Brigadoon*. Stuart Aitken's (1991) essay on Bill Forsyth considers the imbrication of Forsyth's work with 'the bastion of Kailyard discourse' (*Transactions of the Institute of British Geographers* 16:1). While a new generation of Scots writers and directors may have sought to portray their own new vision of Scotland, Kailyard permeates much contemporary work. Bill Forsyth's *Local Hero* (1982) was maligned by the critics for its sentimentality although Aitken (1991) feels that Forsyth subverted the genre with his inclusion of a black minister and punk-rockers (they could equally be seen as relatively harmless eccentrics in the Kailyard tradition). Equally the literary *enfant terrible* Iain Banks who set critics howling with his Rabelaisian novel *The Wasp Factory* ('It is a sick, sick world,' wrote the *Irish Times*) ended his third Scottish work, *Espedair Street* with the narrator Daniel, a successful yet disenchanted rock star, returning to the bosom of his first love Jean in the tiny village of Arisaig. 'I'm sitting back, rubbing my bristly chin and feeling happy again, and wondering if it'll last, and watching the bairn on the trike..' says Daniel as the novel draws to a close.

[24] *Arran Banner* (1997d)

[25] This estimate is based on statistics that he provided. For instance, between 1-11 July 1998 the site received 8,128 hits.

[26] In 1998 tourist numbers were down 10% on 1997. Wider diffusion of Internet technologies have occurred since then but only anecdotal evidence can be offered at this juncture on what effects the web sites may be having on aggregate numbers. Some hotels report n increase in the proportion of Internet bookings but this may simply reflect established visitors changing their mode of preparation.

The actors interviewed could all tell interesting and unusual stories about connections made via the Net however. For instance Bill recalls that 'In Blackwaterfoot the fine art silk person had a customer walked in who said they had found the Arran Internet therefore they had discovered Arran. They had a look around our site, thought it looked nice and decided to come and visit. And they wandered into Kinloch hotel and they found this place, which is snuck around the back of the hotel. And they thought it was great. So she straight away phoned me up and said she needed to be on my site. So we set her up. We're a very simple company'.

Chapter 9

Locality, power and rurality

Chapter outline

This chapter explores the ways in which a locality may become 'powerful' or dependent through the interaction of locally-situated technical, social and natural actors, all framed by contingent structural influences. Drawing upon the findings of previous chapters, power is shown to rest in a multitude of locations in the networks that have developed, acting both to open and to close them to wider relations. The chapter draws to a close by discussing what value the concept of rurality has in such a conceptualisation of local-global relations. Rurality is envisaged as a set of propositions, or beliefs, which constitute both the context and an outcome of socio-technical relations as practised at the local level. It is further suggested that the rural is perpetually re-cast through fierce new rounds of digital development. Finally, the importance to policy-makers of appreciating the fragility of socio-technical networks in rural areas such as south-west Strathclyde is highlighted and directions for future research are suggested.

9.1 Introduction

This study began by questioning what kind of roles 'globalising' information and communications technologies might be allowed to play in the British countryside, should conditions favour their introduction (section 1.2). Attention has shifted between the importance of external structures (Chapter 4) and local agency (Chapters 5-8) in an attempt to answer this question in the context of rural Strathclyde. The study now draws to a conclusion by presenting a synthesis of the arguments developed in previous chapters. These chapters have documented specific uses of ICT in rural Strathclyde, employing Callon and Latour's network theories to ask why certain outcomes are arrived at and not others. Drawing upon Bijker's conception of interpretative flexibility, it has then been possible to see how such outcomes relate to vying perceptions of local 'needs', as practised by local actors. The case studies have been presented as a series of 'micro' stories that, when placed together, can demonstrate how ICT is connective with rural society and economy and the differentials in power that are found there. The emphasis on political concerns that arises here is inevitable from the very first moment that the basic insight that *things*

could have been otherwise is acknowledged (Bijker, 1995, 246). Specifically, this chapter now proceeds to show:

- How the locality – conceptualised as a network of actors, including ICT – can be *made visible* to others, thereby allowing it to 'act at a distance'.
- How power rests, to varying degrees, in many hands and is manifested in *different and often unexpected ways.*
- How rurality is *both the context and the outcome* of such socio-technical interaction.

These linked issues – *locality*, *power* and *rurality* - require further clarification at this point.

Turning firstly to the idea of *locality*, it is clear that concerns with globalisation have re-ignited the long-standing debate within geography over the importance of place-specific action when viewed within the context of much wider structural processes (Baker, 1985; Langton, 1988). Recognition of local variability within a general context first emerged in the 'new' regional studies of the late-1970s (Townsend and Taylor, 1975; Massey, 1979; Bradley and Lowe, 1984). It was a conception which allowed the unique nature of indigenous change to incorporate endogenous transformations beyond talk of modernisation (as in the information society discourse) according to Marsden *et al.* (1993). Yet this sense of 'uniqueness' remained problematic:

> But in what sense is a locality an objective unity? What binds the potentially disparate elements in a particular geographical area into some kind of whole? (*ibid.*, 132-3)

'Nothing' is sometimes the answer. 'Binding' is not always achieved, as has already been demonstrated, and any achievement of local unity is transient at best. As Chapter 5 suggested, recent external intervention by BT into the affairs of Islay may yet threaten a precarious sense of local unity – 'Islay the Brand' - which has taken ten years to achieve. Massey (1993b, 66) writes of a sense of place that includes 'a consciousness of its links with the wider world, which integrates in a positive way the global and the local'. While the tendency is always to try and draw boundaries around cultural areas, places – defined by Massey as 'articulated moments in networks of social relations and understandings' - can never remain 'seamless'. She

proceeds to suggest that just as capital, following Marx, can be conceptualised as a process, so too can the notion of place. This has much in common with the arguments of Foucault who conceptualised the city as a site of conflicting discourses and practices. The terms in which the city – like the countryside - is thought through are determined by the institutions which write about it and police it within professional fields such as architecture, planning, sanitation or law-enforcement.

The second aspect of the analysis – *power* – begins here. If power becomes invested in a material locale, it is by virtue of the institutions and discourses that frame it. The nature of any such body (Foucault) or network (Latour) should be scrutinised, in order to ascertain whether certain discourses, practices and actors are able, under certain conditions, to dominate others. Marsden *et al.* (1993), drawing on the work of Urry, argue for *some* degree of structure in their analysis of the contemporary countryside, recognising that some social groups will possess superior resources and that their conception of place may become dominant. Those who possess superior sets of resources are able to 'act more easily upon their formulations' (*ibid.*, 140). Past actions provide the 'standing conditions' for present and future actions and conditions will be skewed to facilitate the success of certain actors / representations (*ibid.*,152).

The arguments put forward here have been broadly in agreement with these statements. However, as this study has shown, traditional resources such as property rights may be less effective than access to, and skilled use of, web-authoring tools in certain contexts. New technologies can radically redistribute resources among actors, a point that Marsden *et al.* (1993) begin to explore although they do not subsequently exemplify it. Power can therefore change hands, re-orientating the network, as Chapter 8 showed. Official tourist board representations of Arran in holiday literatures are now being successfully challenged by local actors using the Internet. As new networks develop around each new round of technical investment, the *re-location* of power therefore emerges as a key issue.

Drawing on Hindess (1986), Marsden *et al.* (1993) note that attention must be paid to the conditions under which any social interests that impinge upon the network are constructed. However, such 'interests' must first be recognised and acted upon by the relevant actors and have to be formulated under certain conditions. The paradoxical crux of 'globalising' narratives, as Foucault (1980) suggests, is the increasing individualisation that occurs whenever individuals become integrated into a totality

and this has constantly been demonstrated throughout the study. The discourse of 'globalisation' initiates a kind of mental stock-taking amongst its participants and actors often only come to fully define themselves and their own interests *in the course of interaction* with others. This is the paradox of the process of 'Othering' which has received so much attention within cultural studies (see section 2.3.2). The interests that dominate – that become the lead actors in Callon's terminology – set about imposing their interests on others, even if such interests are not fully formulated prior to the interaction. This study has not only shown how some actors succeed in imposing their constructions on particular issues and places but has also demonstrated that their positions have become clarified over time through the process of interaction. Arran islanders have recently hardened their resolve to 'go-it-alone' and there is even talk, at the time of writing, of a rival 'Arran-only' tourist register being established for businesses that may wish to cease paying their subscription to AATB[1]. Similarly, the entire region's idealistic incomers of the 1970s have belatedly rejected the notion of organic self-sufficiency and have instead adopted a more entrepreneurial lifestyle as technological advancement has offered new opportunities.

The third concern of this chapter, the meaning of *rurality*, follows on from the analysis of locality and power at this point. The rural can serve as a set of propositions – or as a 'structure of feeling', to use Raymond Williams' terminology - which serves as the technological frame for interaction and guides the interaction of the actors as they set about 'problem solving'. Yet these propositions are not immutable and are themselves modified through the interaction that follows. Williams (1989) remarks upon the 'co-existence of persistence and change' with respect to the representation of country and city in all previous eras. The rural can therefore be seen as both the context and an on-going *outcome* of the exercise of power by actors within the network. Certain propositions persist but others change as a result of the interaction that they originally inform.

Viewing rurality as the outcome of interaction, rural geographers may then ask *whose* rurality appears as the privileged social construction at any moment in the contemporary countryside and how that outcome is arrived at (Halfacree and Boyle, 1998; Woods, 1997), much as the essence of Foucault's project was, essentially, to understand 'how it is that one statement appeared rather than another' (Hall, 1987). Rurality can be defined as a set of meanings associated with a distinctive type of social space (Marsden *et al.*, 1993; Murdock, 1995, 1997)[2], but there are many

conflicting notions of rurality, each associated with its own network of actors (Mormont, 1990). It is noticeable that successful outcomes – involving the stabilisation and obduracy of one set of meanings - are frequently modelled in rather Darwinian terms in the rural literature, emerging as a result of conflict and coercion. They may, alternately, be viewed as the culmination of more co-operative social processes, as Chapter 6 has demonstrated in the case of Argyll's schools. Whatever the outcome, however, it is the co-existence of persistence and change that marks the imprint of rurality upon these socio-technical networks. This, in turn, helps to determine outcomes of technical initiatives in rural areas[3].

9.2 Locality: actors and networks

Following the schematic outlined above, the first concern here is to map, in general terms, the conditions obtaining at a locality. A locality may be understood, following Marsden *et al.* (1993), as a network comprised of various actors. Following the analyses conducted in previous chapters, these actors can now be 'compartment-alised' into four categories. They consist of the *public* sector (comprising of state-supported agencies) and the *private* sector (comprising of NGOs, commercial enterprises and individual citizens) acting alongside those *natural* and *technical* elements found to be operating locally. Following Callon (1995) and Latour (1991, 1993), networks can be seen to grow and stabilise as actors perform their ascribed roles following successful *interessement* and *enrolment*. However, all actors are always capable of *dissidence* – of betraying a set of meanings and abandoning mutually-held goals. The potential for such dissidence marks the fragility of the locale in relation to global flows, making adaptive skills essential if a locale is to sustain any kind of 'empowerment'. A change in any one of the four compartments subsequently necessitates the re-orientation of the other actors prior to the re-stabilisation of the network.

The adaptive ability of some local elements to re-orientate upon demand invites closer scrutiny. Massey (1984) spoke of local economies as the combination of 'layers, of successive rounds of investment superimposed upon the effects of the spatial structures which came before'. As this study has repeatedly demonstrated, digital rounds proceed *far more quickly* than previous episodes rooted in the advent of analogue technologies; after only a decade ISDN can no longer be regarded as such a

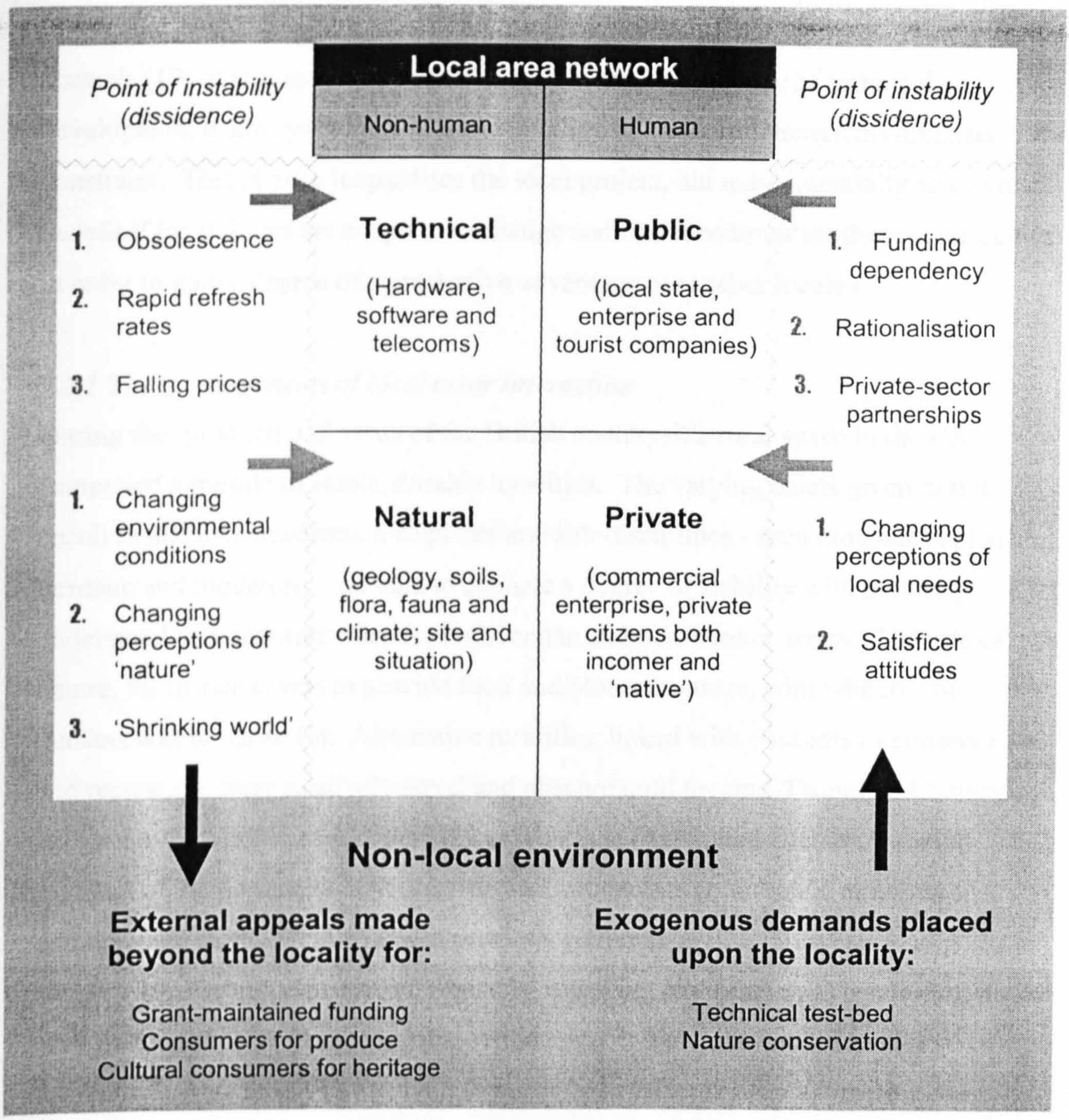


Figure 9.1 The internal alignment of the local area network

remarkable asset for the Highlands, for instance. Any sense of stability, or closure, is likely to be short-lived if digital technology is a lead actor in the network. The corollary to this is that new networks can be mobilised more quickly, precisely because each successive advancement in the capabilities of digital technology provides a fresh chance for the locality to 'bounce back' although, as previous chapters illustrate, only certain actors have the necessary skills and resources required to participate in such activity.

Figure 9.1 illustrates schematically the forces at play in rural Strathclyde, drawing on Actor Network Theory to synthesise unique and underlying causes. Local actor

interaction is always connective with a much wider set of externalities. This is what Castells (1996) argues for when he claims that the contingency of technical development is always subject to some measure of structural, externally-imposed constraint. This at once jeopardises the local project, but may potentially be of great benefit if local forces are adaptive to change and can accommodate these externalities in order to gain a degree of comparative advantage over other locales.

9.2.1 The contingencies of local actor interaction

During the 'productivist' years of the British countryside rural space in the UK comprised a mosaic of stable, durable localities. The varying labels given to this epoch in different academic disciplines and sub-disciplines - including late capitalism, Fordism and modernity - all tend to connate a degree of stability with mutually understood and obdurate roles for both human and non-human actors. The role of nature, for instance, was to provide food and other resources, while the role of humans was to harvest it. Alternative ruralities, linked with concepts of conservation and recreation, were relatively novel and obscure until the mid-Twentieth Century[4], except for the Middle and Upper classes who then constituted a relatively small segment of the population. Within the post-productive countryside rapid demographic shifts, breakdowns in previous governance structures, rapid technological advancements and, arguably, changing environmental conditions, make such a sense of order hard to regain. Although it is the 'volatility' of new technologies that serves as the main focus of this study, changes within this one 'compartment' (with reference to Figure 9.1) precipitate actions in the others, all of which can contribute to a continued state of instability.

Technology-as-actor

With prices constantly falling and specifications improving, ICT can enhance local-level social cohesion while also posing new challenges, a key argument that has been advanced throughout and demonstrated with regard to its 'paradoxical' effects (the Internet offers new marketing opportunities for Arran's tourist trade while also 'opening up' rival locations; external investment in Argyll's primary schools enhances local social cohesion while weakening local autonomy). Originally, prohibitive costs necessitated the promotion of IT and then ICT as a collective endeavour through projects such as the community teleservice centres (CTC)

initiative[5]. This in no longer the case to the same extent because the drastic fall in price of standard PC and Internet access has, in most instances, lessened the need for close human co-operation. Unlimited free Internet access was finally announced by Alta Vista in March 2000[6], a far cry from the concerns with social exclusion that underpinned the creation of a CTC for Islay's population to share in the early-1990s.

However, as technical changes continue unabated ISDN now looks certain to be superseded by newer technologies. At some point new infrastructure may need to be acquired if the region is to maintain a competitive edge over others. This has always been a key concern for development agencies in peripheral regions of the EC such as Ireland and the Highlands as they compete to attract inward-investment, following the 'hostile brothers' metaphor employed by Peck and Tickell (1994) (see also Jones and MacLeod, 1999).

Given BT's great investment in ISDN there have, in fact, been accusations that they are stalling the roll-out of better technologies because they wish to see a return on the investment originally made in ISDN (Wilson, 2000). Certainly, the 'best' technologies do not always dominate as the commercial dominance of the VHS format over Betamax video, despite its superior specifications, famously demonstrates. Other factors must always be taken into consideration and domination is not necessarily achieved simply through heightened performance. Relevant social groups may invest so much in an artefact that its meaning becomes fixed and it cannot be changed easily, thus forming part of a 'hardened network' (Bijker, 1995a). 'Superior' technologies may therefore be blocked by 'external' actors that have already invested in earlier generations of telecoms. At this point the complex inter-play of the actors that constitute the network is already plain and it is no longer clear whether a problem should be treated as technical or as social and whether solutions should subsequently be sought in science, economics or some other domain (*ibid.*, 243).

Public-sector actors

The point at which any state intervention is planned must be considered carefully. Previous chapters have shown that initial expectations of a telework 'revolution' in the Highlands and Islands failed to anticipate just how quickly new infrastructure needs to be built upon if an early lead on competing regions is to be captured and maintained. The philosophy espoused by some public sector actors now appears to

maintain that it is best *not* to lead technical development too far ahead of any real local demand. The risk is too great – this much at least has been learned from the late-1980s. Others who are better able to shoulder the risk of experimentation are left to do so.

> Yes, I think the danger is that we get left behind, *I think we've been trying to be at the spearhead if you like and I don't think that we should be* because I think its got to be big business that spearheads it and when that big business starts to change it'll filter down and we just have to make sure we're able to take the opportunities as they come. *Melody* (AIE, emphasis added)

It is a view that is founded on necessity as much as it is on choice. The public sector experienced serious rationalisation during the 1990s. Regional devolution and the recent establishment of a Scottish parliament will undoubtedly provide new challenges in the future and may even prompt further reform of local government structures. Responsibilities for technical assistance in the region - comprising the linked issues on infrastructure provision, the encouragement of inward investment and training - still remain unclear following the local government re-organisation of 1996. This continues to be a source of frustration for the region's digerati, some of whom believe that state agencies should intervene and co-ordinate local action.

Certainly there is a clear case for guidance as a succession of new technologies are rolled-out. The first generation of digital lines were quickly superseded by ISDN and are now to be followed by ADSL (already becoming a standard in the USA) and WAP technologies. Each new technology, as it is demand-led to metropolitan centres, re-casts the rural as relatively deprived, promoting concerns of comparative disadvantage. This may initiate new rounds of bidding for investment by public agencies and NGOs who may forge or disband alliances to suit particular issues, a phenomenon that Castells (1996) calls 'the network economy', comprised as it is of temporary alliances and arrangements. The establishment of the Islay Development Company - which comprises state agencies such as the local Enterprise Company working in partnership with NGOs such as the Council for Voluntary Service - is just such an arrangement. However, the alliance that public sector agencies must forge with the private sector is frequently an uneasy one, particularly when it involves the delivery of vital services such as education, as Chapter 6 demonstrates.

Private-sector actors

At the same time, SMEs and private citizens - who may willingly choose to participate in Public-Private Partnerships and development initiatives – also have far greater opportunity than ever before to pursue their own ends without compromise. This is evidenced by the population on Arran as some members of the community promote their preferred brand of tourism over the Internet in a thoroughly unaccountable manner. Another technical outcome, as discussed in Chapter 7, is that of teleworkers who need not maintain a real connection with their neighbours and can, in effect, 'sign-off' from their local network (although no such cases were actually interviewed). Chapter 5 does, however, draw attention to the fact that the Islay distilleries prefer not to employ local web designers such as Brian and instead out-source their on-line work, through the parent company of United Distillers, to established firms in core areas such as Glasgow.

In each of these cases, then, any private-sector activity involving ICT may not necessarily be of any benefit to neighbouring actors who lack the skills or capital to similarly participate and cannot enjoy a local multiplier effect. Such individuals - and ONS figures suggest that there are still many of them in rural Scotland – will experience a low degree of inclusion in the socio-technical ensembles that are developing. Attitudes vary amongst the survey group according to the degree to which they would like to see the local state actively take a role in fostering more inclusive use of ICT in the future. Some are content with a laissez-faire state of affairs, while others bemoan the lack of co-ordination by state agencies and criticise the new governance structures that have been established. Notably, it tends to be the 'native' elements of the digerati that subscribe to the latter viewpoint.

Nature-as-actor

Nature – that is, the physical environment - may be conceptualised as the final 'aggregate' actor[7], following Latour's (1993) appeal for a holistic view of nature-society and the avoidance of 'purifying practices' that result in the exclusion of natural forces from social analysis (see also Demeritt, 1996, and comments made by Massey, 1999) . Appropriate natural conditions are essential pre-requisites for the possibility of agriculture and tourism and for attracting in-migrants. They are part of the essence of locality in 'traditional' chorographic regional geography, sometimes

described as the human and subjective art of describing regions (Hartshorne, 1939; Gilbert, 1960).

Fluctuating environmental conditions may therefore undermine the locality, with 'wet summers' often cited as a cause of Arran's declining tourist revenues. Associated concerns about the possible diversion of the Gulf Stream under certain global warming scenarios add further weight to the argument that natural forces must be included in network analysis. Changes in *situation*, as well as site, also impinge upon the rest of the local network as time-space compression occurs, most obviously through the slowly accelerating roll-on and roll-off times for CalMac's car ferries in the post-war years. The 'annihilation' of space by ICT may not have been realised in the first wave of innovation, but further refinements may yet significantly affect the extent to which areas will still be regarded as 'remote'.

While they retain their significance, 'physical' barriers such as the Firth of Clyde or the Sound of Jura are simultaneously both major obstacles to investment and a powerful catalyst for change. The very remoteness of the most out-lying areas leads to their problematisation by a range of agencies. This is most noticeable in the islands, but it also affects Kintyre, which suffers from remoteness without benefit from the additional state aid that is pledged to island communities. Geography matters in the sense that it exerts a powerful influence at the level of policy, demanding redress through whatever technical means are currently available. As Graham (ABC) notes with reference to the ICT projects he has been involved with in the islands of Argyll, they are 'just something that happens naturally here because of geography'.

For the locality to stabilise and to find a role as an actor-in-itself within regional, national and global networks of production and consumption, all of these local actors – technical, natural, public and private - must both find common cause *and* act out their own roles accordingly. In the most extreme case encountered here, the 'branding' of Islay, it seems to be working. However, such stability is always dependent upon the cessation of internal dissidence. It is also subject to *exogenous pressures* which can at any time threaten stability. Such is the price – and the paradox - of external engagement, which remains essential to the effective functioning of all of the networks encountered here.

9.2.2 Exogenous forces (and local autonomy)

Rural areas have, over recent decades, become progressively less self-sufficient and self-contained and are ever more open to wider economic and political influences. This is a general process of 'externalisation' of the consumption countryside (Marsden, 1999, 10) and it is particularly evident in the case of the primary schools of Argyll. Greater technical ambition necessitates that wider linkages are established with a host of agencies and commercial enterprises, resulting in a state of dependency, given that market forces are unlikely to 'wire' the remoter Highlands and Islands entirely of their own volition.

The rural development initiative Northern Infomatics, based in Sunderland, has a policy aim which is 'to bring the Information Society to the region ahead of normal market processes' (*Northern Infomatics*, 1997, 2). This suggests that once it has been 'brought' to the region, it will stay there. In reality, for such a condition to become obdurate, given the rapid turn-over of successive telecom initiatives, local actors will be committed to endless rounds of fund-bidding in order to maintain any comparative advantage that they may initially secure. A large network of external actors needs to be enlisted and maintained, and each round of contact may entail claiming disadvantage. Is this a position that is tenable or desirable? The example of the primary schools of Argyll has illustrated that a degree of local autonomy must be surrendered if services are to be optimised, which can entail compromises of various kinds, not least the commercialisation of the education system.

Here lies a critical definition of power, which will be addressed later. Is the locality really 'acting at a distance' or is it being acted upon, as in the case of the 'clientilistic countryside' described by Marsden *et al.* (1993)? As Graham (ABC) views it, the Argyll region is still heavily dependent on external inputs and it is virtually impossible to imagine continued upgrading without European regional development funds. Yet maintaining a sense of 'visibility' within the flows of the information economy is a necessary pre-requisite for successful entry to the wider circuits of production and consumption. The collective experiences of the region's teleworkers, documented in Chapter 7, highlighted the difficulties and sheer effort required to maintain these sorts of externalised financial flows for operatives in a variety of services.

'Visibility', once achieved, is a state that cannot be guaranteed and must be closely maintained, often through the continued coercion of non-local actors. The

corollary of this is that while such channels remain open, exogenous demands can be placed more easily upon the locale that may disturb the stability of the local network. Rural markets can be more easily penetrated and served at a distance, especially in a deregulated and privatised market (Marsden, 1999). The designation of SSSIs and national parks may all be imposed externally (Toogood, 1995; Adams, 1997), thereby dictating the available options for local entrepreneurs. So too may new social and political structures (such as the Ayrshire and Arran Tourist Board) or even dictates such as political correctness (Smith, 1993a).

External agencies that invest in marginal areas may not necessarily be doing so for altruistic reasons. BT has used this area of Scotland as a 'test bed' for over a decade now[8]. When such a powerful external actor enters the network, it has a profound influence on local stability. Most recently, as explained in Chapter 6, Islay has been designated as a next-generation 'electronic island' by BT Scotland. Islanders will be 'dreaming of electric sheep', as the *Scotsman* (1999b) puts it, whether they like it or not. Such new ideas, if they are perceived as imposed, may be resisted purely on principle. In Brian's view:

> I think the attitude [of HIE] is still 'here it is it'll solve all your problems we'll land it on you' and I don't think that works, you can't impose that stuff, especially in rural communities. *Brian*

9.3 Power is 'everywhere and nowhere'

Marsden (1999) argues for a rural geography that is sensitive to the enabling and constraining factors which determine 'why people in some areas seem quite capable of responding creatively and successfully to prevailing trends while others do not'. In such a context of uneven rural development is it appropriate to talk, in aggregate terms, of 'powerful' localities? Power, as Giddens (1979) describes it, is the transformative capacity to harness the agency of others to comply with one's ends, a definition which usefully emphasises that power is a relational concept (Bijker, 1995a). Is it, therefore, helpful to conceptualise certain localities as agents who exercise power within wider national and global networks? Marsden *et al.* (1993) hesitate to do so, calling such a temptation a 'distraction'. Yet Callon (1991) argues that a network – of which a locality is an example - may also be an actor. Where then is power actually located? Does the locality possess power, or merely the actors that

comprise it? Is such power equally shared between actors or can varying degrees of inclusivity be discerned?

For a locality to become a node in Castells' 'flows' – for it to be seen to be 'acting at a distance' – certain conditions must be met which invest the locality (the sum of its actors) with agency. Marsden *et al.* (1993) suggest that two key provisions must be met in this respect. Firstly, internal divisions must be suspended in order to attract outside investment or mobilise resources; and secondly, a local alliance must be achieved as a variety of agents come together in order to represent the place. Power therefore accrues to the social community that comprises, in part, the locale. However, this is merely one example of power, where concerted efforts render a locality 'visible' thereby making it possible to act at a distance.

Power is always allied with a sense of purpose; 'to do what?' always serves as a suffix to the word. There are many ways in which, and degrees to which, power may be exercised. The ability to act successfully at a distance may be possessed only by individual actors such as professional migrant workers who do not, by and large, interact with others. It may also lie with individuals who make a conscious decision to 'opt out' altogether from technical decision-making. Alternatively, power may be manifest in the imposition of new technologies by external interests, irrespective of local opinion. Local actors may also exhibit it in the successful resistance of such policies. As Touraine says (quoted in Castells 1997b, 309), 'power is everywhere and nowhere'.

9.3.1 Power becomes manifest through internal alignment

A 'powerful' locality must display a high degree of internal alignment between its constituent technical, natural and human actors. Power then accrues to those actors who, through their collective efforts, surpass the sum of their parts, an argument adhered to by Marsden *et al.* (1993). Such a synchronisation of effort is, in a sense, reminiscent of Talcott Parsons' notion of a 'value-consensus', especially as Graham (ABC) describes it:

> So I think there has been that but I think it is this combination of people that have moved into the area, their desire for the rural life, there has been the funding and there has to some extent been a culture of co-operation. *Graham (ABC)*

At times, for instance, a genuine consensus of opinion appears to exist amongst actors on Islay. 'Islay the Brand'- with its strong emphasis upon the use of ICT - is an

approved outcome which is sympathetic to the interests of a range of local actors. While the Islay Development Company is only in its early stages of development, the alignment that has been achieved between different local actors augurs well for the future.

Such stability can sometimes be an outcome that only arises through the mediation of conflict and the lessening of interpretative flexibility. As Chapter 5 showed, the deciding vote that finalised the form and function of the CTC project on Islay was cast by HIDB. It went against the wishes of the Islay and Jura Council of Voluntary Service and, quite simply, reflected the development agency's control over the purse strings. Lack of alignment between different actors weakened the initiative and it failed, in its initial form, to stabilise. A lack of common consensus weakened the collective power of local actors to make any substantive improvements to local society or economy. Only latterly, through trial and error, has a consensus of sorts been reached.

Lacking alignment

In the case of Arran, no common consensus yet exists about how best to promote tourism on the island, which may weaken its structural position within the flows of both national and international trades given the increasingly competitive and sophisticated ways in which destinations are promoted in different mediums. Potential holiday-makers may be unimpressed with the traditional forms of representation of the island presented by Hugh through the medium of *Arran-online*, for instance. Unaware of the more modern indoor facilities that other actors are striving to develop, they may take their custom elsewhere and the island as a whole may fail to rejuvenate its economy.

Impressive though Hugh's web site may be, it lacks the mandate of many of the actors it purports to represent. Power, according to Callon (1986, 224), consists of 'successfully obtaining the right' to express and represent 'the many silent actors of the social and natural worlds they have mobilised'. In this instance many silent actors have been mobilised without their consent, reflecting the unequal allocation of resources to Hugh prior to the beginning of this new phase of socio-technical interaction. While this is not, in itself, a sufficient condition to ultimately jeopardise the location's fortunes, it may well be a determining influence in retarding the rate at which a substantial down-turn in tourism revenues is reversed.

When socio-technical outcomes do not represent a genuine alignment of local interests – symptomatic of a failure in 'joined-up thinking', to draw upon the rhetoric of New Labour – then there is always a risk of being left with little more than 'a field of dreams'. This may be further demonstrated in the case of southern Kintyre where, at the time of writing, local fortunes are now facing yet another downturn as the future of Campbeltown's Irish ferry service is placed under severe threat. In August 1999, the Argyll & Antrim Steam Packet Company announced that it would be reviewing the service which it founded in 1997. The twice-daily service between Campbeltown and Ballycastle was launched with £8 million of public money, including £3 million from Highlands and Islands Enterprise, who anticipated the creation of over 200 direct and indirect jobs and raising more than £7 million in tourism money (*Scotsman,* 1999c). Close alignment between local actors is clearly necessary if such investment is to produce a sustainable multiplier, but in the opinion of some local actors very little else was put in place to capitalise on such an improvement in transport technology. Local conditions were a long way from becoming aligned with the new opportunities that the ferry link offered.

Equally, wherever interpretative flexibility remains high, or where local groups cannot find common cause, the locality is weakened in terms of its potential to successfully 'position' itself globally, as is suggested in the following exchange between Richard and Bill, in relation to the community politics of Arran:

> *Richard*: This is the thing, people...
>
> *Bill*: There are 7 committees in Corrie and Sannox alone, including joint committees. Between the two villages there's 7 of them! So you're always standing on somebody's toes.
>
> *Richard*: But you still don't get no concerted direction from all these things. You just end up getting people pulling in half a dozen different directions.
>
> *Bill*: And of course committee members are always members of other committees so some of your certain committees will be made out of parts of other groups which will have different agendas.

However, such 'scattering' may only reflect adversely on already marginal sections of the population. For those who already have sufficient material resources – including second-home owners, retirees and their ilk – it may simply not matter.

9.3.2 Power becomes manifest through 'acting at a distance'

If a locality's aggregate prosperity hinges upon external patronage, *then it must make itself known to external actors*; power is manifest in any such ability to act at a distance. Local agents are thus playing a reciprocal role in the reproduction of larger structures as they 'insert themselves into the processes of restructuring' (Marsden *et al.*, 1993, 138). The study of change effected at a distance is at the heart of Latour's project, as he documents the spread of scientific 'truth' from Boyle's laboratory (Latour, 1993; see also Lowy, 1994). The Islay Development Company (IDC) are similarly trying to spread a 'truth' as they insert 'Islay the Brand' into the flows of the information economy. The IDC hope that there it will be correctly deciphered at a distance by potential consumers, with little room left for ambiguity. The Jura Development Company is simultaneously attempting to use the Internet to expand its genealogical network of ex-patriots and descendants, as Chapter 4 explained. Both are brave and necessary attempts to 'act at a distance' and in each instance the lead actors stress in their narratives that they have gone to great lengths to secure the necessary state of internal alignment which makes such ventures possible.

Once established, the maintenance of any local 'profile' is a readily acknowledged problem by those lead actors who believe that local conditions may only be ameliorated by sustainable integration into wider external circuits of production and consumption.

> This community has a lot to offer and IT could be instrumental in making it available. Where the problem arises is with *the rest of the country hearing, and being interested.* *Roland* (Kintyre, emphasis added)

> We could set up a server based in here with database access whereby Roy's [craft shop] and so on could have all their goods on the database and people could buy it on-line, and the idea would be that we'd run it through a secure server, people could pay through credit card and at the end of the day we'd say there's your order. *And that way we could maybe bring Islay more into the mainstream.*
> *Brian* (Islay, emphasis added)

> I think most of the companies that come up here - not all of them, but many of them - have got Highland connections - you know their wife may come from the Highlands or their father or they come up sailing so most of them have got - *there's some link, but I think its quite unusual for a company just to come here from nowhere.*
> *Melody* (AIE, emphasis added)

Work must be done to maintain linkages and raise profiles. In the course of the interviews, Brian provided great detail of the efforts that he goes to ensure that the two Islay-related sites that he runs – *Ileach.co.uk* and the Islay Marketing Group site

Isle-of-islay.com – have a high profile in the same way that Hugh and Bill have been maintaining Arran's Internet presence (see Chapter 8). Brian explains how successful the venture has already been, claiming that 'the number of people who access the Islay and *Ileach* web site is already out of all proportion to its importance'. The activities of such individuals – like the teleworkers discussed in Chapter 7 – may therefore be regarded as vital conduit work, linking the local with the 'global'.

9.3.3 Power in other places (everywhere and nowhere)

Castells (1998, 162) views power in similar terms to those that have been outlined above. Namely, it marks the ability to act at a distance in the highly competitive information economy.

> Globalisation proceeds selectively, including and excluding segments of economies and societies in and out of the networks of information, wealth and power that characterise the new dominant system. Individualisation leaves workers to each one of themselves, to bargain their fate vis-à-vis constantly changing market forces...There is also exclusion of people and territories which, from the perspective of dominant interests in global, informational capitalism, shift to a position of structural irrelevance.

Castells calls such 'irrelevancies' the 'black holes of informational capitalism'. However, he leaves little room for the individual to exercise personal choice in the structures that he describes. Even Castells, it appears, is not entirely immune to the determinism of the information society discourse. Whatever happened to the practice of 'just say no'?

What has been apparent in this study has been the multiple and frequently contradictory attitudes that many of the actors actually hold to concepts such as globalisation and its handmaid, enterprise culture. While it may not be practical for an individual to opt-out of the wider 'flows' of life altogether - if country roads are still to be gritted after heavy frost and car ferries are to run on time – it is still possible to choose not to *optimise* the structural position of rural areas (and firms)[9]. There is still a continued reticence on the part of several of the lead actors interviewed to embrace the hegemonic enterprise culture of the state agencies. The satisficer attitudes of many of the self-employed entrepreneurs were discussed at length in chapters 4 and 7 and were shown to sit ill-at-ease with HIE objectives which prioritise start-up numbers and job creation. Success, for these individuals, is not necessarily equated with profit and measured in pounds and pence. Comments made by Islay's

Dave epitomise this tension when he bemoans the continued expectation to succeed *in financial terms* which is placed upon him:

> You have to have the money because society won't leave you alone. You can live off the land which I did, but it's still not...(*pauses*) Even if you don't want electricity and you don't want the telephone, the council will still make you pay council tax or whatever. You have to *produce* money, *the world will not let you sit on a piece of land*, even after you've bought it and just sit on it. *Dave* (Islay, emphasis added)

In this context, non-decision making – in relation to ICT – emerges as a further way of exercising power which directly contrasts with the classic Weberian approach which links power irreducibly with agency. The most extreme manifestation of this would be to willingly choose to enter Castells' 'black holes' (alternatively described as the 'fourth world' of exclusion). Hugh and Andrew perceive that the lack of interest in ICT on their island – epitomised by the *Arran Banner's* avowedly luddite stance – is symptomatic of the more affluent elements' lack of need to engage with ICT. By refusing to 'bargain their fate', they are exercising a form of power by choosing an exclusionary road (Murdoch and Day, 1998).

> But round here you've actually got a lot of people who commute to the mainland. I see them every day, they commute, or they only come back at weekends. And *people don't have to concentrate their minds.* *Andrew* (emphasis added)

> Half the population, they're fairly well-heeled, they're all on very good pensions, they all retire at 50, they play golf every day, they've got great big houses, *and that's the end you would be thinking should have computers* and so on. But maybe one should take a lot more interest in local conditions. *Hugh* (emphasis added)

9.3.4 Power is within the individual

There is another mode of 'opting out' which consists of actively utilising ICT but in a way which is devoid of any real connectivity to wider local conditions. Graham (ABC) notes that incomers to Argyll are still 'looking for the best of both worlds'. This is a partial signing-on to the network-as-locality and not a full commitment. Or, as Graham C, who runs Arran Graphics, says of one of his clients on Arran who could not be interviewed directly[10]:

> He's running his company from the middle of the wood above Brodick castle. He works for a company called the Teal Corporation out of Dallas, Texas and he turns over, I would imagine, 40 or 50 thousand pounds a year just sitting in his house writing reports. So it's important for him to get onto the net, because it's a big business. Doug's had stuff from me printed... *but there's absolutely no connection between what he does and Arran itself* other than the fact that he works on the isle of Arran. *Graham C* (Arran, emphasis added)

Powerful locality (network-as-actor)	Powerful actor (alone)
Internally aligned	Externally connected
Consumer-orientated	Skilled
Visible	Reputable
Branded	Contracted

Figure 9.2 Success in the information economy: Contrasting local area networks and individual actors.

Technology allows such people to migrate and work in a rural environment, but it does not automatically follow that this will produce a local multiplier. Rural policy that examines teleworking opportunities frequently fails to acknowledge this point, stopping short of querying exactly *who* will be able to utilise ICT and how this may relate to wider community participation. This was particularly evident in the 1995 series of rural White Papers (DoE, 1995; Scottish Office, 1995) and recent RDC-commissioned reports on ICT (Huws *et al.*, 1996). If teleworkers - for want of a better word - are not integrated into the local social fabric, then they may well make no broader contribution to that area. Talk of 'opportunities for rural areas' is opaque. To whom do such opportunities present themselves, and how might their interests connect with other local actors? The contrast between a powerful actor (acting alone) and a powerful locality (acting in unison) is summarised in Figure 9.2.

9.3.6 Power is adaptation – for actors and locales

Achieving alignment is not the end of the story, as it may be a transient state. The durability of a network depends upon its *capacity for adaptation* whenever local or external elements begin to exhibit signs of dissidence (Figure 9.1) or obduracy. Bijker (1995a) argues that the 'softening' of the obduracy of previous socio-technical formations can be an example of the exercise of the micropolitics of power. Part of Marsden's (1999) project is identifying how rural areas can help themselves in terms of building up the capacity for innovation and learning amongst local actors so that they can respond to changes more rapidly. Similarly, Cooke and Morgan (1993) describe European 'success stories' such as the Baden-Wüttemberg region in terms of 'learning regions' which possess innovation networks where 'the particular

Location of power	Manifestation of power Locality (network-as-actor)	Individual (actor)
Power is located in the successful goal-orientated inclusion of technology in everyday practices	Internal alignment Visibility Branding	External connectivity Reputation Contracted
Power is located in the ability to respond quickly to the challenges of technical change	Rapid mobilisation of actors Resourceful lead actors Open to change / goals External assistance readily available	Skilled, even if 'dormant' Cultural capital Knowledge of markets and profit-orientated Knowledge of readily available external assistance
Power is located in the use of technology to resist changes imposed 'from above'	Community-led development Initiatives favoured above new business start-ups	Counter-hegemonic stance adopted towards existing governance structures
Power is located in a wilful refusal to pursue technical options	'Paternalistic' countryside with clear function retained from earlier 'hegemonic bloc' and confident attitudes towards future Voluntary status as '4th world'	Affluent / retiree Satisficer / opt-out
Power is lacking	Fail to reach consensus while lacking alternative incomes Involuntary status as '4th world'	Low income or state supported Involuntary status as '4th world'

Figure 9.3 Power and technology.
Power is present or lacking both at the level of the individual and at the aggregate level of the locality, comprising the sum of the actors that constitute its network.

institutional and socio-cultural fabric helps to induce industrial co-operation' (Jones and MacLeod, 1999, 298).

This leads some theorists to emphasise the importance of 'specific horizontal relations of reciprocity and co-operation rather than vertical relations of authority and dependence' (*ibid.*, 299). In the case of rural Strathclyde – given its largely 'clientilistic' nature – obduracy may be located in either realm. For instance, BT may

continue to provide only ISDN in rural Strathclyde for the foreseeable future, despite its relative inferiority in comparison with new technologies. Vested interests that prevent 'softening' of existing socio-technical relations will need to be tackled by state agencies acting on behalf of local interests. Equally, if marginal sections of the population on Arran are to benefit from ICT, then it is clear that it is the obduracy of more affluent incomers and retirees that must be addressed. Otherwise only a handful of actors who are only loosely affiliated with the locality / network – professional migrant teleworkers – will be deploying or benefiting from ICT, as appears to be the case currently.

9.4 Rurality as context and outcome

Rurality and locality are concepts that have a tendency to merge together. Essentially the rural courses through the local schematic (Figure 9.1) like the veins in a stick of rock. In this study rurality is a set of propositions which serves as the context for goal-orientated interaction between actors, and is exactly analogous to what Bijker refers to as the 'technological frame' in studies of technology and society. It is a social construction which provides a context for the actions and activities of all of the actors and is simultaneously both a source of strength (galvanising co-operation through partnerships founded upon a shared perception of common need) and a weakness (as it is often a point of conflict i.e. *dissidence*). Yet rurality is also an outcome of interaction, articulated with a sense of either empowerment or dependency. Rurality is inherently flexible, as all such myths are, changing in tandem with the interaction that it helps to guide before subsequently serving once more as the context for a new round of networking.

9.4.1 The rural as a context

As context, rurality most often connotes notions of deprivation or of idyll (Raymond Williams referred to 'counter-pastoral' and 'pastoral' mythologies) and elements of both these notions frame the ICT debate in the narratives of the actors. The chance to address long-standing concerns of 'core and periphery' – a raison d'être for the development agencies that were conceived during the Wilson administration – lies at the heart of the early roll-out of ICT to the entire Highlands region. Equally, the romantic *ideal* of rural telework certainly stimulated much of the initial interest in the

potential for technically enhanced work in rural areas well beyond any genuine market potential.

Perception of the rural as 'lacking' has underpinned the state of dependency made manifest in the drive for ICT-related inward-investment that remains a hallmark of state-guided activity in the region, in an always-continuing game of 'catch up'. In a recent address to Inverness College, James Hunter, the chair of the board of HIE speculated.

> Imagine Inverness and the wider Highlands in 2050. Imagine the town and its surrounding area, by this point, every bit as successful – economically and otherwise – *as any part of Britain*. Far-fetched? Not particularly. (Hunter, 2000, 37)

As Cloke, Milbourne and Thomas (1997) state, one constant over the last 40 years has been the sedimentation of 'the deprivation metaphor' into policy discourses. The appeasement of deprivation remains the central pillar of rural policy at all levels, and this is the context into which ICT has been thrust. As has been argued, the casting of ICT as the 'solution' to a problem is a common theme of informational discourse. However, the very notion of deprivation is contested as many recent rural studies have noted (Cloke and Little, 1997). In their narratives, some actors show acute awareness of the counter-pastoral 'mythologies' that are framing external concerns over levels of ICT provision:

> I guess that agencies like the RDC perceive certain rural areas as having a problem with ageing populations and so forth and they assume that you will naturally seize upon IT as a means of plastering together the community. *But the people who live in the community don't see themselves like that* and they're not necessarily going to... I find we are to a degree remote, but then I think that's great, I think that's an advantage. *But from the outside looking in*, people like, well not HIE, but rural development and what-not, you are remote that's a disadvantage therefore what can we do to ease your sense of remoteness but it never ever seems to click that maybe we quite like being remote. *Brian* (Islay, emphasis added)

> And people in a rural area will not say 'I'm disadvantaged, I'm poor' because - it's difficult to explain but they've chosen to live in a rural area they've learned to live with the fact that it takes longer to get to the mainland, it takes longer to get a joiner to come and do something. So they've learned to live with that and they don't find that it should disadvantage. They're low income and so on but they still don't think they're poor or poverty stricken. Their whole concept of what poverty is is different in a rural area *so it's difficult when somebody from the outside comes in and says you know 'you've got poverty'* because they don't believe they have.
> *Anne* (I&JCVS, emphasis added)

ICT is invariably cast as the scourge of deprivation – however this is envisaged - in any contemporary debate on rural policy. Highly skilled individuals will develop a niche in high-paid self-employed work in a pleasing natural environment. Previously

untapped rural labour forces will be brought on-line and incorporated into service sector processes such as credit card transactions or the administration of parking fines. There are, of course, widely acknowledged concerns that accompany such predictions. Low-paid call centre work may merely constitute a more sophisticated spatial division of labour as firms have seized upon the use of cheap labour in peripheral regions. Indigenous rural communities may also find that they are assuming the role of personal service providers to a new migrant 'superclass'. However, the basic adherence to technological determinism is not challenged.

Alternatively, ICT can become articulated with a perception of the rural as 'idyll'. Promotion campaigns mounted by ICT providers frequently employ pastoral imagery and, as became apparent in Chapter 6, BT have at times exploited their investment in the region by capitalising on the 'wild but wired' imagery of Argyll in their own advertisements. Brian, in particular, rejects the 'romantic notion' of rural telework that he feels has been enforced onto Islay.

> So the people that say 'teleworking, that's what the islands are crying out for'. Well maybe that's what *they* are crying out for because they would like to think that *they* are sitting out on a remote island teleworking. There's kind of a - what's the word? - romantic notion about that, particularly with the weather like at the moment, sitting in a wind-swept island with your lap-top communicating with somebody in Tennessee... There's a wonderful romantic notion about that happening and I know it does happen, more so in the states than over here. That's fine. But you've got to find these people in the first place. And that can be done, but I think it's very much a minority. And it'll come to pass through a natural selection process rather than the Scottish Office says 'you bloody well will!' or something. *Brian* (Islay)

The contestation of rurality is therefore a major source of instability for the local networks. The greater the degree of interpretative flexibility that exists between local actors and between local and extra-local agencies, the harder it is to maintain a high degree of internal alignment for the locality and to achieve some degree of stabilisation. However, what is also apparent is that rurality – the bundle of myths and propositions that have guided the interaction – is itself transfigured as part of the interactive process of network building.

9.4.2 The rural as outcome

Rurality is not merely a set of existing categories that are projected onto technology, as the argument in chapter 8 began to explore. The rural is continually re-cast in the interaction that proceeds. The seductive properties of the idyll may be amplified as they are employed to promote teleworking or distance learning opportunities.

Equally, rurality may be re-constructed around the symbolic re-casting of core-periphery relations and a concomitant sense of deprivation as each new round of technological development, with its superior specifications, heightens rather than diminishes fears of marginality. Core, periphery, dependency and deprivation are all relational concepts and as such are infinitely re-negotiable.

Castells (1996), Law (1986, 1994), Latour (1993) and Massey (1993a, 1993b) have all argued, in various contexts, that concepts such as flows and networks should replace 'core and periphery' or 'local and global' models as the spatial basis for geographical analysis. This may be an appropriate measure to take for the purposes of a functional analysis of production-consumption relationships. However, *what needs to be retained* is a semiology of core and periphery which, as it appears in the narratives of the actors, has *not* diminished but has is in fact been *heightened* as a result of socio-technical interaction. The binary of 'them and us' is a recurring motif, constantly re-spun in the crucible of socio-technical interaction, which draws upon a multitude of spatial scales to anchor a frequently regressive sense of place:

> Most of the initiatives if you like as far as IT is concerned have been imposed from people, like you're saying the Scottish Office and HIE and what-not, *although the people who work for the HIE here are the same as the rest of us* - they live here and what-not, *they're being told by further up, but I mean further-up is in the centre.* You know, Highlands and Islands, they're based in Oban, or they're based in, you know, the head office thing is probably in Glasgow or something, where putting Information technology into somewhere...'great, no problem', but you can't really just wander out into these places and dump it in and say well it worked in Glasgow so it has to work in Islay. It doesn't follow. *Brian* (Islay, emphasis added)

Brian's binary opposition is explicitly related to 'Glasgow' or 'London' as the source, or 'centre', of unwanted or 'imposed' directives while HIE is 'the same as the rest of us' and is therefore located on the margins. Interestingly enough, national terms of reference pertaining to England and Scotland do not appear in any of the narratives, although Brian does at one point comment that 'Bowmore [distillery] is owned by some Tory, and she's Japanese. I don't think there's a single distillery on this island which is actually locally owned, or run, or anything'. Rob also perceives an uneven and exploitative geography, only he envisages a spatial hierarchy, with the Highlands and Islands placed somewhere near the bottom:

> [You're] up against the fact that if you can telework you can telework world wide. You can avoid having people doing office work at £20 in London and instead have people at £10 an hour in Sheffield or £5 in the Outer Hebrides. It's just as easy to have people at £1 an hour in Southern India or somewhere else who will do the same work and do it just as well. *Rob* (Kintyre)

Donald expresses the most pronounced feelings of marginality, distancing himself and his home island of Jura from local agencies such as HIE.

> Well, the HIE stand at the Islay show in August had a little section about computing and IT, but they don't tend to venture onto Jura. *Donald* (Jura)

Scale, then, is constantly re-created by the 'paradoxical' technology that is the Internet (McKie, 1996). It is an effect of the networks, as perceptions of 'have' and 'have-not' are heightened with each new round of technological advancement and are acted upon with recourse to spatial terms of reference which hinge upon the construction of rurality as marginality. This re-construction of marginality is, of course, sometimes essential to the on-going process of attracting investment, a point that Anne makes:

> And how do you define disadvantage in a rural area? I define it one way when I'm writing a grant application probably and define it differently, you know, at other times. *Anne* (Islay)

She acknowledges the 'mythic' and flexible nature of rurality, explaining that she herself employs different conceptions of rurality at different times. This is a point that has previously been examined by Ward and Woodward (1998) and also by Milbourne (1998) in an paper tellingly entitled *We're Considerably Poorer Than You*, outlining the strategies that competing local authorities use to secure the lion's share of structural funds. If funding is desperately needed for new technological investment then ICT may have the further paradoxical effect of encouraging rural areas to perpetuate a self-pertaining myth of marginality. However, this need not be the case. As Chapter 4 mentioned, Donald believes that the use of ICT for promotional purposes has lent the Jura Development Trust an air of sophistication in the eyes of charitable organisations that have been approached for donations. Impressed with the Trust's use of email correspondence, such charities have, Donald suggests, been happy to invest in people who are perceived to be technically astute. Theirs is a hybrid rurality that is both wild and wired.

9.5 Escalator over the hills

In his seminal work *The Country and The City* (1973), Raymond Williams challenged the 'authenticity' of the social construction of rurality by likening the search for an essential rural experience to that of riding an escalator that extends backwards in time over successive hills. Each era looks back to the previous as a 'golden age' but the process never ends. Rurality is continually reconstructed as the timeline regresses.

> Or shall we find the timeless rhythm in Domesday, when four men out of five are villeins, bordars, cotters or slaves? Or in a free Saxon world before what was later seen as the Norman rape and yoke? In a Celtic world, before the Saxons came up the rivers? In an Iberian world, before the Celts came, with their gilded barbarism? Where indeed shall we go, before the escalator stops? (*ibid.*, 11)

For Williams, taken-for-granted aspects of everyday life belie a complex history of ideological construction, much as they do in the work of Martin Heidegger:

> Tradition takes what has come down to us and delivers it over as self-evidence; it blocks our access to those primordial 'sources' from which the categories and concepts handed down to us have been in part quite genuinely drawn. Indeed it makes us forget that they have had such an origin, and makes us suppose that the necessity of going back to these sources is something we need not even understand. (Heidegger, 1967,14)

Yet the persistence of myths, even though the forms and images change, often subtly, also indicates some 'permanent or effectively permanent need, to which the changing interpretations speak' (Williams, 1989, 75). This chapter has been working towards the conclusion that the escalator can be seen to be stretching forward *over* the hills also. This is not to conflate the work at hand with futurology, by attempting to predict which socio-technical ensembles will prosper and what their wider influence might be. Rather, its purpose is to assert that, whatever the collective outcome – irrespective of who is vanquished and who is successful, both human and technological, and whether this is achieved through co-operation or conflict - there is likely to be one constant, one 'permanent need, to which the changing interpretations speak'. The permanency is the re-casting of the 'twin pillars' of rurality – of pastoral and counter-pastoral, idyll and deprivation – through the very networks that they inform.

The fallacy underlying the absolute 'annihilation of time through space' proposed by HIDB executive Sir Robert Cowan, announcing the 'irrelevance' of distance that information technology would bring about (*Scotsman*, 1989), continues to inform state and private sector initiates. The technological determinism that both state and

private-sector agencies often subscribe to continues to obfuscate rather than illuminate the relations between technology and marginal locations. Network analysis, in contrast, draws attention to the complex inter-relations between technology, society and space and the crucial role played by the technological frame in guiding all such interaction.

Network analysis fosters understanding of the fact that rurality – when culturally constructed as a counter-pastoral state of deprivation - is not a 'condition' that can ever be 'cured' as it is a relational concept. Instead it is always out of reach, always 'over the next hill' and will be re-cast with each new generation of technical interaction. No single technology can redress deprivation. In turn the rural idyll, as a structure of feeling, draws technology to itself in a number of ways beyond the basic and genuine necessity for job creation in rural areas. Rurality is not alone in being perpetually re-cast. Constructions such as 'local', 'rural', 'Scottish', 'core' and 'periphery' are all re-drawn through the interaction, and are modified, frequently amplified and often contested in the process. In reality, it is very hard to deconstruct such notions in isolation, as they are all aspects of identity formation as practised at the local level. Similarly, it is hard and often counter-productive to prise apart political, economic and social compartments, as this study has also shown.

9.5.1 Policy implications

And what are the implications for rural policy of all of this? While it was not one of my stated objectives to develop detailed policy guidelines, my discussion of research ethics (see section 3.5.2) clearly noted a personal desire to avoid the pitfalls of 'research tourism', especially given the study's use of qualitative techniques. With this in mind, and given also the study's recurring concern with the role of state agencies in rural Strathclyde (linked with issues of power distribution), it would clearly be inappropriate *not* to briefly summarise the key findings of the study as they relate to the activities of the public sector. Certainly there is no quick-fire shortcut to finding ways to ameliorate conditions in problematised rural regions, no easily decipherable 'secret' underlying the success of those 'learning regions' which do exhibit a capacity for learning and rapid innovation. However, certain general guidelines can be established based upon the experiences of rural Strathclyde.

Acknowledging local sensitivity

There is no clear correlation between political practices of the state and 'success' in the field of ICT. That is not to say that 'anything goes' though; state agencies do exercise marked structural constraints of the contingency of technical development in the region. However, local sensitivity to the Highlands-wide promotion of ICT, as evidenced in the ambiguous attitudes displayed by a range of actors towards state-led models of intervention, must be anticipated and engaged with more effectively. The unproblematic assumption that local actors will rise to the challenge of ICT has, in part, confounded the original aspirations of the Highlands and Islands Development Board, at least in those parts of the HIDB / HIE region that have been surveyed here. Satisficer attitudes, partial 'signings-on' and simple indifference to ICT are all in evidence.

Acknowledging the primacy of locality

The primacy of locality must be acknowledged, despite the 'globalising' discourse that is articulated with ICT. This is a problem of *scale*. It has been shown that local actors are rarely sympathetic to Highlands-wide initiatives, evidenced in particular by the failure of staff at Islay's Community Teleservice Centre to develop an effective network with other CTCs in the manner that was originally intended by HIDB. Identification at the local level suggests that future projects must be community-driven rather than enterprise-led if they are to genuinely foster local social and economic cohesion. Further, there is frequent evidence of low tolerance to overt action by centralising forces and an acute sense of core and periphery often appears in the narratives of the actors. This is in spite of the greater connectivity afforded by ICT that might have been expected, in part, to 'annihilate' such perceptions of distance.

Acknowledging rurality

A headlong drive to maintain comparative advantage in ICT capability may yield a new sense of dependency, in stark contrast to the original intended outcome, namely to consign such talk, once and for all to the past. The 'high road' to regional self-sufficiency is a course of action that is framed by the social construction of rurality as 'lacking'. While laudable, it needs to be tempered by a realistic acceptance that, as successive rounds of digital innovation make their presence felt in urban cores, it may

not always be possible to successfully circumvent market forces and secure an early roll-out in rural areas. Choices must be carefully made, mindful of local needs and the ability of local state agencies to successfully capitalise of any subsequent investment. Failure of local agencies to co-operate has resulted in a wasteful duplication of resources during the 1990s while the multiple 'brakes' which have been applied to state intervention in rural Strathclyde have also hindered capitalisation on previous rounds of infrastructure provision.

More 'romantic' conceptions of rurality also colour the debate. Why did ICT come to be seen as the 'solution' for the highly problematised HIDB region in the 1980s? Certainly there are restricted opportunities for further development of agriculture and tourism in the region but there may be other paths to follow. Some of the actors whose narratives have been drawn upon in this study clearly believe that 'rose-tinted spectacles' frame the rapid association of the countryside with ICT. Diversification might be achieved through other means and development agencies might do well to question just why the notion of teleworking appears to be such an irresistible proposition. The cases documented here certainly suggest that sustainable remote working is still a difficult outcome to secure.

9.5.2 Future directions for research

The stories that have been followed in this study are still unfolding. Initiatives such as Islay the Brand and Project Ossian are only in their early stages of development. Indeed, establishing a cut-off point for this study was extremely frustrating; during 1999 and early 2000 several new local initiatives have come on line which will undoubtedly refigure local networks while continuing innovation introduces ever more numerous possibilities. In particular it will be interesting to see if any early stabilisation - or obduracy – does occur, or whether the region remains open and responsive to new rounds of innovation. Growing usage of wireless applications in the UK may have a profound effect on development prospects in the future given that basic mobile phone coverage is still largely restricted in the Highlands.

More broadly, and in contexts other than the HIE region, empirical research might further examine the vital practice of *conduit-work*. There is nothing new in the notion of key actors linking local and wider environments. In rural Strathclyde, for instance, previous waves of migratory entrepreneurs have established heritage centres and hotels which cater for tourists drawn from other regions of the UK and frequently

from North America and Europe. However, such conduit work did at least effectively tie globally derived consumption capital to the locality by providing jobs and stimulating local multipliers.

In contrast, if newer migrants conduct their business affairs in isolation as teleworkers, is this really to be taken as evidence that ICT is aiding rural *areas* to connect to the flows of informational capitalism? A new elite may emerge who lack any material connection with their locales. As this study has emphasised, comments such as 'the growth of teleworking has much to offer for the future prosperity of rural Scotland' (Scottish Office, 1995, 5) are highly ambiguous with respect to both the people and the places that are subsumed under the heading of 'Scotland'. More studies are needed that question *who* the prime beneficiaries are of successive new ICT-related opportunities in rural areas. As this study has shown, individuals do not always act as effective conduits through both constraint *and choice* - future work might address this further.

Rurality or locality?

Recent work in contemporary rural studies has made the contestation of rurality the central object of analysis in relation to the broader social and economic processes that have undermined the productivist hegemony. In such an analysis of the contested countryside, each competing social representation of the rural becomes a network that attempts to enrol actors in order to extend its influence (Marsden *et al.*, 1993). Alternatively, each competing construction of rurality can be envisaged as an actor within a wider network of rural relations (Halfacree and Boyle, 1998). My emphasis here has been somewhat different. Rather than treating rurality as an actor-network, I have proposed that it should be treated as a specific form of technological frame, following the arguments of Wiebe Bijker which resonate with Raymond Wiliams' seminal reading of the rural as a structure of feeling.

In this study actors have been shown to re-assert the primacy of their locale as a network-in-itself, despite their increased exposure to globalising flows of information. Such an approach allows direct continuity to be established between rural studies and the work of geographical meta-theorists such as Castells. It also goes some way to answering Marsden's (1999, 1) plea that rural geography should be placed 'more central to broader debates in the social sciences' through a more 'spatially engaging' interpretative approach. It is an approach that might be applied to other types of local

environment such as urban enclaves and villages, although a different set of experiential propositions will serve as the technological frame in such instances – 'steel' or 'docklands' spring to mind.

It has also been argued here that power accrues to localities that can adapt to change in ways that allow external actors to readily comprehend their meaning *within the context of global flows of information*. This is a useful approach and one that could also be applied in other geographical contexts. The creation of 'new' elite districts such as Clerkenwell or Hoxton that rise from the ashes of earlier neighbourhood formations in central London are testament to the power of an alliance of estate agents and property developers in creating meaningful locales within an ever-more competitive land market. Yet here as well, the ephemeral nature of fashionable post-codes illustrates just how hard it is to maintain a durable *presence* (and not simply a durable meaning. Sometimes a meaning needs to be changed, as the Arran islanders are all too aware).

This is where the real challenge lies for local actors, not simply in securing access to whatever is currently regarded as the most superior set of technological tools (although this may well be necessary, on occasion, for the success of the local project). A new generation of technology, in itself, can never provide a guarantee that a locality will be able to join the constellation of stars that comprises the information economy in perpetuity. A durable presence as a node requires that formations do not harden too much or else they may lack the softness that allows them to adapt to a new set of demands. Different ruralities, as we have seen, enable or constrain such adaptation according to the mix of their ingredients. And these ingredients are always permanence and *change*.

Notes

[1] An open letter from Andrew and Graham C (Arran Graphics) to the *Arran Banner* (14 August 1999) outlines their plans to establish the Isle of Arran Accommodation Register.

[2] Murdoch (1997) subscribes to an interpretation of ANT that views rurality as a network. He adopts Callon's metaphors and proposes a conception of rurality as a network formed from the interaction of humans and nonhumans. Previous definitions of rurality, based on statistical indicators, community relations or functionality set within an 'urban-rural' framework, are too problematic, according to Murdoch. My approach here differs by treating locality as the network and viewing rurality as an outcome of local-global networking.

[3] Such tensions are also discernible in relation to issues such as fox-hunting and the planting of genetically-modified crops.

[4] In *Love On the Dole* (1933), for instance, Walter Greenwood clearly conveys the point that the majority of the working classes of England had never visited, nor did they ever expect to visit, the deep countryside.

[5] As Rob explains it, '[In] the Seventies the computer was a really expensive thing and ordinary individuals, even small businesses, wouldn't be able to afford to fork out to buy a computer. So this would be provided on a village or a town basis - the telecottage would be a place where people would come and work with this marvellous thing, this marvellous computer, and possibly other equipment'.

[6] For a joining free of £30, unlimited access is granted.

[7] The granting of agency to nonhumans is a position that has been adhered to in this study. However, geographers drawing upon science and technology studies have, at times, been reticent to accept the symmetry of human and nonhuman agency proposed by the likes of Latour (see, for instance, Marsden *et al.*, 1993), an interesting position for an academic discipline which steadfastly retains an institutional blending of physical and human elements. At various points in this study the role of the physical environment has been shown to be of extreme importance and has been modelled as a motive force upon innovation. Massey (1999) has recently begun to re-explore commonalties between human and physical geography which are tangential upon questions of space-time that globalisation has called up. Describing this as 'a preliminary dip into deep waters' it is certain to spark future debate on duality. This study, while hardly revisiting the excesses of environmental determinism, has insisted that an analysis of socio-technical relations must embrace a basic recognition of the power of physical network elements to set the terms for debate.

[8] Scotland as a whole was also used by the Thatcher government to 'road-test' the Poll Tax ahead of the rest of the UK in the mid-1980s.

[9] Future interpretative research might do well to develop better understanding of such satisficer attitudes and partial signings-on to ICT that appear so surprising to the more evangelical advocates of the information age. As Will Hutton (2000) puts it, 'we all believe in enterprise now': enterprise is seen as a kind of behavioural attitude that individuals should aspire to acquire. Any work conducted on local sensitivity would do well to start from the assumption that uptake is not always wanted and connectivity is not always sought.

[10] This individual's existence was only discovered during the final day of fieldwork.

Glossary of terms and abbreviations

ADSL Asymmetric Digital Subscriber Line. Depending on how far a home is from the telephone exchange, this service will typically provide up to 2 MBPS speeds (15 times faster than ISDN) download. This is ideal for workers who need to move large files – including drawings or graphics - from home to office or vice versa. The upload speed (sending files) is not as fast, normally 512 KBPS but this is still twice as fast as ISDN. The main advantage of the system is that no re-wiring is necessary, old telephone lines will do.

Analogue There are two main categories of voice telephone: analogue and digital. Analogue telephones operate with electrical signals that have a direct frequency and amplitude relationship to what is spoken and heard. In digital telephones speech is converted to binary patterns of digital pulses. The digital signals are converted back to audible speech at the handset receiver by. So even though digital information is transmitted, the signals coming from, and going to, the handset remain analogue.

Area Tourist Boards (ATB) are daughter companies of the Scottish Tourist Board and are the only statutory bodies in Scotland which are not guaranteed funding by central government, relying instead on subscriptions paid by their members and funding from local councils. Tourism is one of Scotland's main industries generating total income of over £2.5bn and employing 177,000 people. The majority of tourism businesses - some 16,000 - are members of at least one of the 14 Area Tourist Boards (ATBs) which provide a focus for tourism marketing and visitor services at a local level. Visitor services are provided by a network of 150 Tourist Information Centres (TICs). The Local Authorities, although retaining their own tourist departments, are not expected to act independently to market tourism. Instead they work in partnership with Area Tourist Boards, as do Local Enterprise Companies. At a regional and national level Highlands and Islands Enterprise (HIE) and Scottish Enterprise National (SEN), together with Scottish Tourist Board, all have important leadership roles in tourism. Most recently this involves Project Ossian, an initiative which aims to co-ordinate the Internet activity of the ATBs.

Argyll & Bute Council (ABC) was established following the dismantling of Strathclyde Regional Council in 1996. It has a director of IT services whose remit, in addition to maintaining council services, does provide some leeway for fostering the use of ICT within the local community. (See Strathclyde Regional Council)

Argyll and the Islands Enterprise (AIE) offers both advice and support to local businesses by hosting occasional seminars and providing free publications on a range of ICT topics, including the Internet, mobile communications and video conferencing. As part of the Information Society Initiative, run by the Department of Trade and Industry (DTI), AIE has equipment to allow businesses to try out, at first hand, new information and communications technologies including video-conferencing. AIE has two sets of equipment, which are moved between various locations in Argyll & the Islands, including Dunoon, Lochgilphead, Islay, Rothesay, Campbeltown and Oban. The equipment normally spends six months in each location. They cannot normally give any financial assistance towards the purchase of general office hardware and software for established firms in the 'horizontal' sector (tourism, food & drink and manufacturing). However, if a business is wholly or largely ICT-based, it may be eligible for assistance under the Finance For Business scheme, especially if it is in a 'priority development area'. Such firms are designated 'KIT' - knowledge, information and telecommunications companies. The Technical Advice Service also provides three types of support - including financial assistance - for businesses: Innovation and Technology Counsellors can provide technical advice for businesses; Innovation Credits can be used by the Counsellors to buy 'small' amounts of information or service on behalf of companies;

the Innovation Advisory Service can access both local and national networks of technical expertise. The service covers businesses in all sectors of industry, except those which are publicly owned or funded, or which have more than 250 employees or an annual turnover of more than £14 million.

Bandwidth The rate at which information can be transmitted and received is determined by the computer's central processor, its modem speed and the network's bandwidth. See also *ADSL, ISDN, Leased line.*

Browser A browser is a computer program that can read the digital code that makes up a Web page (see *HTML*) Examples include Netscape Navigator and Microsoft Explorer.

Cable modem This is a system which is part of the standard cable television service. It can provide very high speeds of up to 8 MBPS, although the major drawback to the system is that it will slow down according to how many people are using it at one time. This is expected to be one of the front runners in high speed internet delivery over the coming years.

Constructivism holds that reality is not a given but is constructed, and by heterogeneous means.

Councils for Voluntary Service (CVS) are funded directly by the Scottish Office. The Scottish Council for Voluntary Service has more than 50 daughter companies across Scotland's mainland and islands, providing practical assistance to people involved with voluntary, community and charitable activities. This may include working with statutory agencies to access services and providing community representation both locally and nationally. The Islay and Jura Council for Voluntary Service (I&JCVS) has been instrumental in securing investment in ICT on Islay on several occasions.

Cyberspace is a world of electronic information, data, and connections among these data. It includes many different kinds of information, all intended for different purposes and user groups, such as biographic details of places and people, stock transactions, weather reports, interactive games. Increasingly, the e-commerce boom has led to an expansion in Internet shopping, and advertising (Starrs and Anderson, 1997).

Cyborgs (short for *cybernetic organism)* 1: A part-machine, part-human being, common to science fiction. 2: 'Imploded, germinal entities, densely packed condensations of worlds, shocked into being from the force of the implosion of the natural and the artificial, nature and culture, subject and object, machine and organic body, money and lives, narrative and reality. Cyborgs are the stem cells in the marrow of the technoscientific body; they differentiate into the subjects and objects at stake in the contested zones of technoscientific culture' (Hararway, 1997, 14).

Dial up Otherwise knows as PUFS (plain old telephone service). This is the basic service used by 90 per cent of the population in the UK to connect to the internet. All that is required is a PC and a modem which connects to a standard telephone line. The maximum speed is 53 KBPS which is fast enough for using e-mail and browsing the occasional web-site.

Digital See Analogue entry.

Domain name This is the official Internet presence for an individual or organisation. It will consist of a string of recognisable elements, each separated by a dot.

Download Files are invisibly downloaded onto the computer's hard disk when a user is on-line and are placed in a directory named 'cache'.

DTI Department of Trade and Industry. The Government Department with responsibility for granting Licences to Telecommunications Code System Operators.

E-commerce Doing business electronically using structured messages (electronic data inter-change), unstructured messages (electronic mail) and databases.

E-mail (also *electronic mail).* The first electronic mail message was sent in 1972. Now, almost anything can be transmitted digitally, including word-processed documents, spreadsheets, graphics files, and digital sound (often in the MP3 format).

Ethernet (also known as IEEE 802.3 standard) is a way of linking local machines and their networks. It can achieve speeds of up to 100 MBPS.

GSM Global System for Mobile Communications. The International/Pan European operating standard for the new generation of digital cellular mobile telecommunications. This enables mobile phones to 'roam' across country boundaries, accessing international mobile networks

on the same number and being billed on one invoice. PCN operators work to the same GSM standards but at different frequency.

Hacker A technically adept individual who is able to gain entry to restricted domains in cyberspace. Usually regarded as a benign but mischievous force, hackers are sometimes cast as the 'folk heroes' of the Information Age, but are increasingly seen as a threat by big business and government as the commercial value of Internet transactions grows.

HERTZ I cycle/second, measurement unit for radio frequencies. 1 kHz corresponds to 1000 Hz, 1 MHz corresponds to I million Hz, I GHz corresponds to 1 billion Hz (1000 MHz). Cellular operators use 900 MHz, PCN operators 1800 MHz. (1.8 GHz)

Heterogeneous Engineer A figure like Edison is a heterogeneous engineer who worked not only with and through inanimate materials but also people, texts, councils, economics etc. The phrase was coined by Hughes (1983).

Hits The running count of contacts between remote computers and a server are referred to as hits. Thousands of hits a day is a substantial load; tens or hundreds of thousands require a robust server.

Homepage The entry point to an Internet domain; it may be all that is there (a single page), or it may be the front for an infinitely more complex site that has thousands of pages.

Host A computer attached to the Internet with a unique address (usually, its TCP/IP number).

HTML Hyper Text Mark-Up Language. The language of the World Wide Web is HTML. The language is anything but difficult to write, which helps account for the profusion of Web sites, and HTML remains the standard, although Java, from Sun Microsystems, is being used more and more because it permits sophisticated movement of graphics and text that is difficult to produce in HTML.

Hypertext A document which allows the reader to click on a dynamic link (usually represented as a coloured word) to take him / her to more information about the subject the word represents. It is the way Web sites are created and linked to one another.

Internet (also *the Net).* The evolution of computer networks began with Arpanet's four hosts but now includes the whole of the Internet, which ranks among the most complex and organised entities on earth. The World Wide Web (also www or simply the Web) is part of the Internet but not all of it. See also *cyberspace, World Wide web.*

Internet host See *host.*

ISDN Integrated Services Digital Network. One step up from PUFS in terms of speed. ISDN has long been the staple, if somewhat pricey, alternative to the standard dial-up service. Basic ISDN offers up to I28 KBPS speed, with a super quality digital telephone service tacked on. This gives high speed connectivity between ISDN users, and a flexible phone service which will switch automatically from internet access to voice as needed.

ISP Internet service provider. The ISP acts as a gateway between the home user and the Internet by providing a number of modems that maintain communication, one on one, with each user.

Leased line Competitive pressures are driving down the cost of dedicated leased lines all the time, and have several advantages. With a separate leased line there is no competition with other household members or business partners for use of the existing telephone line. Top speeds are likely to be around the I28 KBPS mark.

Logon The sequence of actions for gaining access to cyberspace (or a computer account) is broadly described as the logon procedure. There can be several steps: If logging on from home using a dialup connection, a computer must be turned on, and then the relevant software is started for checking e-mail, browsing the Web, downloading software, or gaining access to a newsgroup. Many Web browsers now, however, integrate all these functions into one computer application (Microsoft Explorer, or Netscape Navigator, for example). The software in turn initialises a modem, which dials up the Internet service provider (ISP),

MINITEL Introduced into French homes in the 1980s, this provides a 'Yellow Pages' type service using a standard dial-up connection. Very quickly, pornographic use was to dominate the MINITEL system - an early example of unanticipated uses? Other low-tech networks that have subsequently been absorbed by the Internet include FidoNet and Bitnet.

Modem (MOdulator/DEModulator) Hardware which converts digital data from a computer into a format that can be transmitted down traditional telephone lines to other computers. It also translates incoming data.

Moore's Law In the last decade and a half chip power has continued to double over successive short time intervals and further advancement has come in the form of networking. (This has been facilitated by the third important area of innovation: telecommunications. Electronic node technologies and new transmission technologies have combined to overhaul the analogue telephone system. The first industrially produced electronic switch, the ESS-1, was introduced by Bell Labs in 1969. By the mid-1970s integrated circuit technologies had mad possible digital switching greatly increasing speed and flexibility in comparison with analogue technologies. Major advancements in fiber optics and laser transmissions, digital packet transmissions increased the original power of ISDN on copper wire from 144,000 bits to , potentially, a quadrillion bits. Each leap forward in a specific field amplifies the effects of related information technologies, in a synergistic process. Mobile telephony relies on computing powers to route the messages but in term revolutionizes the computer/user interface, allowing mobile use and virtual office-space.)

NET See *Internet.*

North Ayrshire Council (NAC) was established following the dismantling of Strathclyde Regional Council in 1996. It has a director of IT services whose remit, in addition to maintaining council services, does provide some leeway for fostering the use of ICT within the local community. (see Strathclyde Regional Council)

PSTN Public Switched Telephone Network, the fixed (i.e. wired telephone system as connected to homes and businesses throughout the UK.

Relativism involves not taking the existence of some phenomenon as sufficient explanation for its widespread acceptance. Indeed, with respect to evolution, now disputed in many US state education it is clear that science is increasingly subjected to a relativistic critique.

Search engine Software for finding information or sites on the Internet. Popular search sites are Google, Alta Vista, Lycos and Yahoo! They reside on a server where a database of keywords is maintained that is queried at the user's request, generally using a search protocol developed by the computer user. The results of the search are hypertext links; one click and your browser moves to that site.

Strathclyde Regional Council, from May 16 1975 to March 31 1996, embraced the former counties of the City of Glasgow and Ayr, Bute, Dunbarton, Lanark and Renfrew, most of Argyll and a small part of Stirling County. Covering an area of 5,348 square miles with its nineteen districts it was the United Kingdom's second largest region with a population of 2,500,000 people. The 1973 Wheatley Commission's recommendations for a tiered structure of local government had originally recognised that the region shared a sense of 'social and economic coherence' mainly attributable to historical economic and demographic interdependence between Glasgow and the surrounding rural counties of the West. However, the strains of running such a large authority became impossible.

Symmetry, according to Bloor (1976) is the principle that for the purposes of historical and sociological analysis one must treat what comes to be seen as true in science in the same way as what comes to be seen as false. What counts as true is the outcome of social processes, not the cause of that outcome. Bijker (1995) also refers to symmetry as the equal weight given to success and failure in the analysis of technical development.

TCP/IP Transmission Control Protocol/Internet Protocol. The standard set of protocols used by the Internet for transferring information between computers. It divides data into packets that are then reassembled by the software when they are received. A kilobyte is a thousand bytes of information; a megabyte, a million; a gigabyte, a billion; a terabyte, a trillion.

The Corrom Trust provides, through its Scottish Rural Programme, co-ordinated funding and professional advice to support regeneration in rural Scotland. This programme also brings together Rural Forum, COSLA, British Telecom and Scottish Homes to establish local partnerships with Scottish rural communities. The Trust has been funded by its primary sponsor, the Tudor Trust, the AJAHughA Trust and the British Telecom Community Programme. The aim of the Corrom Trust is to empower local people to shape the future of their community on the basis that successful regeneration depends on local involvement. It places particular importance on public participation and on involving young people. Corrum aims to mobilise resources in the community, increase co-ordination between local

organisations and focus attention on an achievable and strategic programme of action. Corrum is highly active on Islay and Jura.

The Lotteries Commission provides the Highlands and Islands with a significant proportion of the money allocated to Scotland and the grant per capita for the Highlands & Islands is double that of the UK. The money is awarded through parliamentary constituencies, and Argyll and Bute rank 53rd out of 659 nationally in terms of the number of grants received to date. The value of these awards totalled £4,971,000 by November 1998, spanning arts, charities, heritage, sport. In addition, The Highlands & Islands area (including Arran) has been awarded 63% of Scottish 'Millennium' project money, leaving the rest of Scotland with only 37% of the funding. Of this Argyll and Bute received nearly one fifth. In total the Highlands & Islands has received some £76.8 million since the inception of the National Lottery Distribution Fund in January 1995. This is 1.5% of the total funds distributed in an area with 0.64% of the UK population. Recent 'millennium' awards have encouraged creative proposals involving ICT and the 21st Century Halls programme (envisaged as a 'cyber-café' of sorts) has stimulated talk of the Internet in much of rural Scotland.

URL Uniform Resource Locator. The address which represents a Web server and document. It is usually preceded by http:// for Web sites and often, but not always, followed by www, indicating the World Wide Web. If a URL isn't known, it can be found using a search engine.

WAP Wireless Application protocol. A system that allows Internet data, stripped of any large files such as graphics and sounds, to be transmitted directly to mobile telephones

Web (also World Wide Web*)* A graphics-intensive cyberspace environment that developed rapidly after 1993. The Web is less than the whole of the Internet, but for many users it can seem one and the same.

Webmaster The technical (and often stylistic) force behind the maintenance of a Web site, the Webmaster is the person to whom queries about maintenance, updating, and, in general, the care and feeding of the site are addressed. In general, each Web Site, which may include many subsidiary pages below one homepage, has its own Webmaster. When supervising a site with many people contributing material, the Webmaster fulfils approximately the same function as the manager of a trailer park: arbiter in many small disputes over style, form, propriety, and appropriation (Starrs and Anderson, 1997).

Wired/unwired A person, organisation, firm, university, or country can be referred to as wired, or then again, as unwired. What is alluded to is the degree of connection to the Internet and cyberspace; someplace thoroughly wired is well connected; someplace unwired is off the Net (Starrs and Anderson, 1997).

Survey group data collection

1 Letter to local newspapers

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Information Technology Research

April 23 1997

The Editor
The Arran Banner
Brodick
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KA27 8AJ

Dear Editor,

Middlesex University would be very interested in speaking to anyone on Arran who regularly uses Information Technology, e-mail or the Internet as part of their day-to-day work or training. We are in the preliminary stages of designing a research project looking at the use of, and need for, IT in the islands and hope to make Arran the central focus.

Initially we just want to get a rough idea of who is using computers, and how long they have been working on Arran for. We want to get people's impression of how important Information Technology is, and may become, to the island people. Next year we may be looking for people to participate in a more in-depth study profiling individual IT users.

In the first instance could anyone who is interested in helping with the preliminary stages of the project contact Simon Oakes for more information at the School of Geography, Middlesex University, Queensway, Enfield EN3 4SF. Even better, send an e-mail to *Simon2@mdx.ac.uk*. We look forward to hearing from anyone out there!

Yours sincerely

Simon Oakes

2 Interview prompts for pilot survey

Telephone Interview Schedule

Date _____

Name _____

Telephone _____

Organisation _____

Address _____

Email _____

Opening statement (switchboard)
Good morning / afternoon. I am calling from the department of geography and environmental management at Middlesex University in London. We are in the preliminary stages of designing a research project looking at rural teleworking in the Strathclyde region – people working from home with computers. At this stage we are seeking advice from professionals working in this field. Is there anyone in your firm or department who could spare a few minutes to talk to me?

Second statement (interview)
A lot of talk about telework, it seems, is all about prospects for remote working for professionals currently working in urban areas. We want to conduct a detailed study of the uses of IT in rural areas of Strathclyde and see just who is getting on-line. Perhaps new jobs are being created and local people are starting to work on-line instead? I'd like to get a general impression of what's happening in your area.

Guiding questions

1 How much IT-related activity is there in your local area?

_____

_____

2 can you identify any areas which have an unusual amount of activity? Or any projects or initiatives that really stand out?

_____

_____

3 Can you think of anyone else it might be useful for me to talk with?

_____

_____

4 Are there any relevant publications or documents you know of that I can get hold of?

_____

_____

Thank you for your time. May I contact you again sometime in the future?

YES / NO

Survey group data analysis

Data coding

The data was analysed without the use of PC tools. Instead, the interview transcripts were printed and annotated by hand. A distinction was made between the *descriptive* and *conceptual* content of the narratives. The former category consists of factual information, relating for instance to the individual's length of residence, their annual office expenditure or the size of their client base. The conceptual content relates to the subjective meanings and beliefs that are held by the individual.

In each chapter of the thesis the theoretical concepts that were used determined the exact categories that were introduced into the analysis. For instance, in Chapter 9, where emphasis was placed upon the attempts made by Arran's internet community to promote an alternative mode of representation for the island, the following codes were applied to the data: *Community [C], Expertise [E], Motivation [M], Partners [P], Rurality [R], Scale [S]*. Remarks which alluded to the individual's sense of belonging to the island community and the extent to which they believed that they possessed a mandate to speak on the behalf of others were coded 'C'. Alternatively, comments which displayed awareness that dominance in cyberspace can be achieved through the acquisition of superior skills were coded 'E'.

In the following extract, the first interview conducted with Brian has been coded for inclusion in Chapter 10 where greater emphasis has been placed upon the creation of 'powerful' and non-dependent locales, as achieved through close alignment of local actors with shared goals. The persistence of the 'twin pillars' of rural mythology – of pastoral and ascetic visions of nature – also features here. The chapter also considers the ways in which ideas of geographical scale and difference are actually reinforced by 'globalising' technologies such as the Internet. Accordingly, the following codes are applied: *Dependency [D], Flows [F], My way [M], Rurality [R], Us & them [U].*

Descriptive (underlined)	**Brian, Islay** (first interview 30 October 1997)	**Conceptual** (highlighted)
Distance remains an issue Minimum 2 hours' travel to mainland Population still falling – under 4,000 Agricultural modernisation continues – need jobs	I guess that agencies like the RDC perceive certain rural areas as having a problem with ageing populations and so forth and they assume that you will naturally seize upon IT as a means of plastering together the community... but the people who live in the community don't see themselves like that they're not going to...[*pauses*] I find we are to a degree remote... but then I think that's great, I think that's an advantage... but from the outside looking in, people like, well not HIE but rural development and what-not, you are remote that's a disadvantage therefore what can we do to ease your sense of remoteness but it never ever seems to click that maybe we quite like being remote, maybe that's nice maybe that's an advantage. I certainly count it as an advantage being remote it bothers me not at all... but in order to do this gig at the weekend I've got to travel off the island. But I like being over here. It even has the advantage of. . if you go to the likes of Cowel highland games there's always a march past at the end of all the bands and the cheer that Islay pipe band gets is way out of proportion to any musical ability we've got at all. We are generally third or fourth from last in the bottom group because we only compete once a year. We're just not that good and the cheer we get is out of all proportion because *it's Islay*... it's that wee island. And that's quite a nice part of it, to be stuck here a two-hour boat journey off the side... no, I think if most people really did hate it here they would shift...certainly the population's been decreasing, the last full census ... it was originally four thousand and the last census dropped it to three thousand five hundred and apparently it's been going down since then that may well be because farming's becoming more mechanised... far fewer people can now run the same size of farm...so there's less work in that sense.. and because these things (computers) are essentially labour-saving devices I don't see that bringing much in the way of full-time employment over here.	R – social construction of rurality; rejection of notion of 'deprivation' by islanders U – HIE identified as 'us, not 'them' U – Islay has strong sense of identity – 'imagined community'? D – hidden fears of continued dependency?

Nine hypotheses for Manuel Castells' network society

1 The existence of an information economy

Productivity and competitiveness depend on knowledge, management and technology and this is applicable to all sectors, not merely service industries. The information economy is *not* synonymous with the service economy, as envisaged by Bell. Indeed, when considering the fields of software design and biotechnology-based agriculture it is impossible to distinguish the boundaries between goods and services. This is a new mode of production, *informationalism*, which is organised around 'the principles of maximising knowledge-based productivity through the development and diffusion of information technologies, and by fulfilling the pre-requisites for their utilisation (primarily human resources and communications infrastructure)' (Castells, 1996, 204).

2 The information economy is constituted as a global economy

This is not the world economy theorised by Frank and Wallerstein in the 1970s, which has existed since at least the 16th century. The global economy functions in real time as a unit utilising telecommunications technology. (Possibly Castells overstates his case here. The introduction of the first trans-Atlantic telephone link at the end of the Nineteenth Century reduced the time lag between New York and London markets from three weeks to one day. Certainly this was a far greater watershed to cross than the arrival of instantaneous communications in the late 20th Century.) Economic activity may be local or regional but its fate is always determined by connections with the global economy. Capital is globalised but labour is localised and its geography extremely uneven. The global economy is able to scan the world and connects highly skilled individuals with markets. It switches off unskilled labour markets, be they in Burkina Faso or the South Bronx. Because of these trends 'there has been an accentuation of uneven development, this time not only between North and South, but between the dynamic segments and territories of societies everywhere, and those others that risk becoming irrelevant from the perspective of the system's logic. Thus the 1st/3rd world division is unsustainable with the emergence of a '4th World' which is constituted as a world of social exclusion and cuts across all boundaries The switched-off regions, or 'black holes', are culturally discontinuous. They are found in the inner cities and impoverished rural areas of the G7 nations as much as they are the in the shanty towns of Africa.

3 The network economy is at the heart of the information economy

It is not simply a network of enterprises (an 'agglomeration'), rather it is a series of temporary alliances, arrangements and pieces of firms which form and reform to fulfil specific tasks. The operating unit of the network economy is thus a network of segments of firms and organisations.

4 The information economy both creates and destroys jobs

There is no conclusive evidence that the diffusion of Information technology significantly alters employment levels in the economy as a whole, with the USA showing a net gain of 10 million new jobs over the last 4 years. Globally, manufacturing is still a growing sector with a 72% increase in employment occurring between 1963 and 1989 (Castells, 1997b). This is the largest wave of urbanisation and industrialisation in history. However the information

economy does undoubtedly alter the *way* in which work is done. A dramatic re-negotiation of the labour-capital relationship has tended to be in favour of the latter, sustained by technological development (automation, sub-contraction and off-shore production). The development of the network economy has also allowed firms to shift employees to consultancy and subcontracting status with rapid growth in self-employed and part-time work, especially for women. 90% of recent new jobs in Silicon Valley are defined as non-standard employment types and so too are 40% of all jobs in the UK. The individualisation of work is obvious, as we witness 'the reversal of the historical trend of salarisation of work and socialisation of production that was the dominant feature of the industrial era... in some countries such as Italy and the UK, self-employment is becoming again a substantial component of the labour force' (Castells, 1996, 265). This is a reversal of the Industrial Revolution formula of employment. Overall the traditional form of work, based on full-time employment, clear-cut occupational assignments, and a career pattern over the lifecycle is being slowly but surely eroded away. (*ibid*., 268)

5 Labour unions and the welfare state are radically modified by the process of globalisation

Increased inequality, social polarisation and exclusion are reminiscent of an earlier era as union and public-sector power blocs are eroded. Pockets of dereliction are being created with very few out-points and many in-points. 25% of USA is now functionally illiterate and drugs, crime and illness are some of the multiple entry points to the black holes of informational capitalism which are the result of this.

6 Symbolic communication in culture

Cultural expression is shaped by a world of electronic media. This can be envisaged not as an Orwellian 'wall' or a global village but as an inclusive media, an interactive hypertext. We inhabit a symbolic environment shaped by this hypertext. We live through the system and it is the dominant expression of culture. Socio-technical relations are fully reflexive.

7 Media is now the space of politics

People receive political knowledge via the media. Messages are simplified to images and thus to people-in-the-media, hence the rise of personality politics. The most effective weapons are negative messages and character assassination. Resources are necessary to maintain a media profile and must be maximised during moments of power.

8 The transformation of time

The network society is organised around 'timeless time'. Pre-industrial biological time was followed by industrial clock time and now by the de-sequenced and compressed time of the Network Society. The blurring of the life cycle by science and a new 24 hour chronology of work time characterise timeless time.

9 The transformation of space

ICT simultaneously concentrates and decentralises activities. Electronic linkages are still materials and link territories: we are by no means placeless. Most activities occur in a place, rooting history and transmitting culture. *But the space of flows dominates the space of place*. Systems link the CBD to the suburbs by jumping over and excluding the Inner City. Localities then become disembodied from their cultural, historical, geographic meaning, and reintegrated into functional networks, or into image collages, inducing *a space of flows that substitutes for the space of places*. Resistance politics must therefore be staged within the flows and counter-domination is made possible by the new opportunities that are presented for the penetration and subversion of 'official' flows, perhaps through the practise of 'hacking' or by publicising previously suppressed information.

Source: Castells (1996, 1997a, 1997b, 1998)

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